

DOCUMENT INFO

16

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Filename: 58603-1999-02-18-COR-01 (Proposed
Conditions for Approval of Aboveground
Temporary Storage Tank - Gorman).pdf

Walter T. Gorman, P.E., P.C.

Consulting Engineers

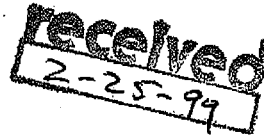
**Fire Protection Consultants
Building & Fire Code Specialists**

**115-14 Beach Channel Drive, Rockaway Park, N.Y. 11694
Phone: 718-474-3400 Fax No. 718-945-5931**

The City of New York - Fire Department
Bureau of Fire Prevention
9 MetroTech
Brooklyn, NY 11201-3857

Feb. 18, 1999

Attn: Mr. James Hansen, P.E.
Director of Engineering and
Technical Management Standards



Re: MOTIVA Enterprises, LLC (Shell oil Co.)
25 Paidge Ave. Brooklyn, NY
B.S. # 980089
F.P. Index # 9805103A
Response To F.D. Letter of January 26, 1999

Dear Mr. Hansen

Following phone conversation and conference calls from Mr. Anthony Sigona, P.E. of Department of Environmental Conservation and Douglas Lessing of Handex with your office, we respectfully request reconsideration for approval of a 275 gallons aboveground tank for temporary storage of recovered hydrocarbons at the referenced bulk oil terminal with the following conditions:

- 1- The proposed tank shall be installed in a concrete curb in addition to 110% secondary containment provided with the tank
- 2- The tank shall be provided with a high level alarm which would shut down the pumps supplying recovered product into the tank as shown on DWG. 4 of 6
- 3- The proposed high level alarm shall be monitored at the dispatch office which is manned 24 hours a day, seven (7) days a week
- 4- A 20 lb. Dry chemical extinguisher shall be installed in the vicinity of the tank. This is in addition to the existing foam monitor and yard hydrants located within 50 feet of the tank.

Walter T. Gorman, P.E., P.C.

Consulting Engineers

**Fire Protection Consultants
Building & Fire Code Specialists**

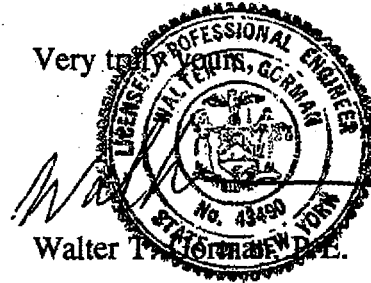
**115-14 Beach Channel Drive, Rockaway Park, N.Y. 11694
Phone: 718-474-3400 Fax No. 718-945-5931**

Feb. 18, 1999

Page 2 of 2

We appreciate reconsidering the denial for the installation of the proposed tank. Should you have any question, please feel free to call my office.

Very truly,
Walter T. Gorman, P.E.



cc: Mr. Anthony Sigona, P.E. - DEC
Mr. Mario D'Antonio, Mgr. - Motiva
Mr. Doug Lessing - Handex
Mr. Abbas Family, P.E., Dir. - WTG PE PC

D:\FIRE DEPT\Motiva_Response to F.D.letter of 1_26_99.let.doc-

1270 Avenue of the Americas, Suite 1804, New York, N.Y. 10020

Phone: 212-698-8965

Fax No. 212-698-8588

Shell/Motiva 0008134

DOCUMENT INFO

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Location - SCI).pdf

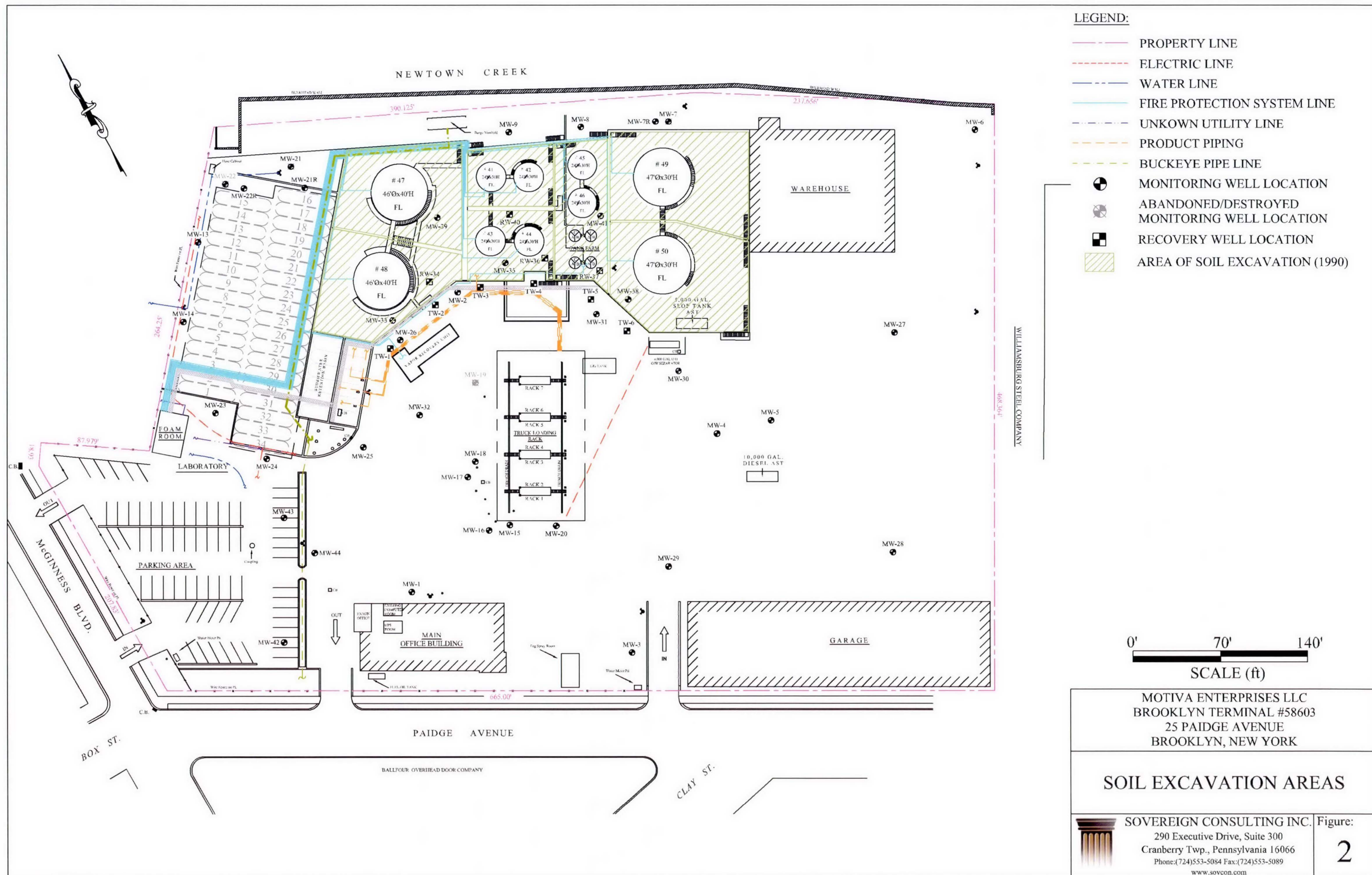


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Filename: 58603-2011-11-15-FIG-01 (Former
Product Recovery AST - SCI).pdf



DOCUMENT INFO

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DocID: 00000489

Filename: 58603-2011-11-15-FIG-01 (Landfarming
Location - SCI).pdf



©2010 Google

Eye alt: 604 ft

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©2011 Europa Technologies
Image ©2011 Bluesky

40°44'18.63" N 78°57'05.23" W elev: 3 ft

Location of Soil
Bioremediation
(Landfarming)
Project

Imagery Date: 12/31/2003

DOCUMENT INFO

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DocID: 00000320

Filename: 58603-2009-07-20-PER-01 (SPDES Permit
Renewal Application - Motiva).pdf

July 20, 2009

New York State Department of Environmental Conservation
Division of Environmental Permits
Bureau of Environmental Analysis
625 Broadway
Albany, NY 12233-1750

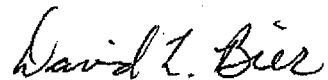
SUBJECT: SPDES RENEWAL APPLICATION
MOTIVA ENTERPRISES LLC –
BROOKLYN TERMINAL
DEC NO. 2-6101-00105/00019
SPDES NO. NY0006131

Dear Madam or Sir:

Enclosed is State Pollutant Discharge Elimination System (SPDES) Renewal Application for the Motiva Enterprises LLC Brooklyn Terminal located at 25 Paidge Avenue, Brooklyn, New York 11222.

Please contact Ms. Jennifer Bothwell at (860) 749-2839 or me at (856)810-7720 if you have any questions about the information included in the enclosed application.

Sincerely;



David L. Bier
Field Environmental Coordinator

Enclosure

cc: NYSDEC Region 2 – John Cryan – Regional Permit Administrator
J. Lintz/F. Signorello – Motiva – Brooklyn, NY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
State Pollutant Discharge Elimination System (SPDES)
NOTICE / RENEWAL APPLICATION / PERMIT



Please read **ALL** instructions on the back before completing this application form. Please **TYPE** or **PRINT** clearly in ink.

PART 1 - NOTICE

04/15/2009

Permittee Contact Name, Title, Address

Facility and SPDES Permit Information

MOTIVA ENTERPRISES LLC
~~MARIO D'ANTONIO~~ JAMES W. LINTZ
 25 PAIDGE AVE
 BROOKLYN NY 11122-1281

Name: MOTIVA MARKETING TERMINAL
 Ind. Code: 5171 County: KINGS
 DEC No.: 2-6101-00105/00019
 SPDES No.: NY 000 6131
 Expiration Date: 02/01/2010
 Application Due By: 08/05/2009

Are these name(s) & address(es) correct? if not, please write corrections above.

The State Pollutant Discharge Elimination System Permit for the facility referenced above expires on the date indicated. You are required by law to file a complete renewal application at least **180 days** prior to expiration of your current permit. Note the "Application Due By" date above.

CAUTION: This short application form and attached questionnaire are the only forms acceptable for permit renewal. Sign Part 2 below and mail only this form and the completed questionnaire using the enclosed envelope. *Effective April 1, 1994 the Department no longer assesses SPDES application fees.*

If there are changes to your discharge, or to operations affecting the discharge, then in addition to this renewal application, you must also submit a separate permit modification application to the Regional Permit Administrator for the DEC region in which the facility is located, as required by your current permit. See the reverse side of this page for instructions on filing a modification request.

PART 2 - RENEWAL APPLICATION

CERTIFICATION: I hereby affirm that under penalty of perjury that the information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to section 210.45 of the Penal Law.

JAMES W. LINTZ
 Name of person signing application (see instructions on back)

TERMINAL COMPLEX MANAGER
 Title

Signature

Date

7/20/09

PART 3 - PERMIT (Below this line - Official Use Only)

Effective Date: ___/___/___

Expiration Date: ___/___/___

Permit Administrator

Address:

NYSDEC - Division of Environmental Permits
 Bureau of Environmental Analysis
 625 Broadway, Albany, NY 12233-1750

Signature

Date

This permit together with the previous valid permit for this facility issued ___/___/___ and subsequent modifications constitute authorization to discharge wastewater in accordance with all terms, conditions and limitations specified in the previously issued valid permit, modifications thereof or issued as part of this permit, including any special or general conditions attached hereto. Nothing in this permit shall be deemed to waive the Department's authority to initiate a modification of this permit on the grounds specified in 6NYCRR §621.14, 6NYCRR §754.4 or 6NYCRR §757.1 existing at the time this permit is issued or which arise thereafter.

Attachments: General Conditions dated ___/___/___

Please enter the
numbers from your
current permit:

DEC Number: _____

SPDES Number: NY _____

SPDES RENEWAL APPLICATION
QUESTIONNAIRE**THIS PAGE MUST BE COMPLETED AND RETURNED WITH YOUR COMPLETED APPLICATION**Please **TYPE** or **PRINT** neatly using adequate pressure to make ALL copies legible. Keep a copy for your records.

1. Has the SPDES permit for your facility been modified in the past 5 years ☐ YES ☒ NO
2. Dischargers who use, manufacture, store, handle or discharge toxic or hazardous pollutants are subject to Industrial Best Management Practices (BMP) plan requirements for toxic or hazardous substances. A BMP plan prevents or minimizes the potential for release of pollutants to receiving waters from such ancillary industrial activities, including material storage areas; plant site runoff; in-plant transfer; process and material storage areas; loading and unloading operations, and sludge and waste disposal areas.

Does your facility conduct ancillary activities as described above, which are not covered by BMP requirements in your current permit? ☐ YES ☒ NO

Please indicate which of the following best describes the situation at your facility:

- ☐ None of the concerns on the "Self Evaluation List" seem to apply to my facility at this time and I will not be applying for a modification of the SPDES permit in the foreseeable future.
- ☐ Yes, some of the items on the "Self Evaluation List" have led me to believe that the permit for this facility needs to be modified. I already have a complete modification application pending with the Department.
- ☐ Yes, some of the items on the "Self Evaluation List" have led me to believe that the SPDES permit for this facility may need to be Modified. I have requested the appropriate forms by phone OR I have completed and attached the "Request For SPDES Application Forms" (included in this renewal package) to allow me to submit a permittee-initiated Modification application. See The "Request For SPDES Application Forms" page for a toll free 800 number.
- ☒ The items on the "Self Evaluation List" have left me unable to conclude whether my permit needs to be modified at this time. I am reporting the following general concerns about my permit:

SEE ATTACHED DESCRIPTION OF PENDING FACILITY
CHANGES

DISTRIBUTION:

Regional Water Engineer
Regional Permit Administrator
Central Office (BWP)

ATTACHMENT

SPDES RENEWAL APPLICATION SUPPLEMENTAL FACILITY INFORMATION:

FACILITY: Motiva Enterprises LLC
Brooklyn Terminal
25 Paidge Avenue
Brooklyn, NY 011222-1281

SPDES NO. NY0006131
DEC NO. 2-6101-00105/00019

Background: The Motiva Brooklyn Terminal has an Action Level Monitoring requirement for benzene, ethylbenzene, toluene & xylene(s) (BTEX) in the current permit. Based on a review of BTEX Action Level Monitoring Data, the NYSDEC Region 2 Office requested that facility improvements be made to address BTEX concentrations in the discharge. After evaluating the facility operations, Motiva will be making the following improvements to eliminate BTEX in Outfall No. 001:

2009 Improvements (4th Quarter):

- The terminal gasoline truck loading rack canopy will be extended to cover the entire loading area, eliminating stormwater entering the area and eliminating potential product impact to rainwater flowing to Outfall 001.
- The stormwater collection strip-drains at the perimeter of the loading area will be eliminated and a roll-over containment berm will be installed around the loading area to provide containment and prevent surface runoff of rainwater from entering the loading containment area.
- Drainage from the containment area will be disconnected from the oil/water separator that flow to Outfall 001 and will be connected to an underground (vaulted) containment tank. The 6,000 gallon containment tank will contain the volume of the largest truck product compartment for SPCC Plan purposes.
- Non-contact stormwater diverted from the loading area will continue to flow to Outfall 001 in the same quantities as before.

Note: These improvements will eliminate stormwater entering the truck loading area and prevent BTEX impacted water from entering the terminal drainage system that flow to Outfall 001.

Proposed 2010 Improvements:

- An engineering evaluation is underway for the proposed replacement of the terminal's main oil/water separator. This work is being done to update an existing oil/water separator, which is still in good operating condition. The replacement is part of normal facility operational maintenance. There will be no significant change of the separator size since the terminal operations remain the same and water discharge volume remain the same.

Request for Removal of MTBE Limit - The terminal has not received, stored or loaded gasoline containing MTBE since 2003. Based on this, Motiva requests the Department consider removing the MTBE parameter/limit from the permit.

**BEST MANAGEMENT PRACTICES &
STORMWATER POLLUTION PREVENTION PLAN**

MOTIVA ENTERPRISES LLC

BROOKLYN TERMINAL

**Brooklyn Terminal
25 Paidge Avenue
Brooklyn, NY 11222**

Tel. (718) 383-4066

FACILITY INFORMATION PAGE

<i>Facility Information:</i>	
<ul style="list-style-type: none">• Facilities Addressed in this Plan:	Owner/Operator – Motiva Enterprises LLC <ul style="list-style-type: none">• Brooklyn Terminal
<ul style="list-style-type: none">• Name & Address of Owner:	Motiva Enterprises LLC 910 Louisiana Street Houston, TX 77002
<ul style="list-style-type: none">• Designated person accountable for the implementation of this Plan at the facility sated above:	James W. Lintz – Terminal Manager Brooklyn Terminal 25 Paidge Avenue Brooklyn, NY 11222 Tel. (718) 383-4066

STORMWATER POLLUTION PREVENTION PLAN

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STORMWATER POLLUTION PREVENTION PLAN

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BMP FORM 1 SITE COMPLIANCE EVALUATION REPORT

STORMWATER POLLUTION PREVENTION PLAN

REVISION RECORD

Note: It is the responsibility of the holder of this plan to insure that all changes and updates are made. The holder should:

- Remove and discard obsolete pages.
- Replace obsolete pages with updated pages.
- Record each revision on this form.

Change Date	Affected Pages Numbers	Description of Change(s)	Name
July 2000	Entire Plan	Update per SPDES Permit	D. Bier
Oct. 26, 2004	Entire Plan	Review of Terminal & Operational changes – None needed at this time.	
July 2009	Cover, ii, v,	Update	D. Bier
EXAMPLE			
01/01/99	1-1 thru 1-4; 5-2	Update	

1.0 INTRODUCTION

1.1 PURPOSE

This document was prepared in accordance with the requirements set forth in the Brooklyn Terminal SPDES Permit No. NY 0006131, Special Conditions – Best Management Practices. The Best Management Practices (BMP) Plan discusses best management practices, inspections and evaluations to be utilized to prevent pollution of stormwater runoff. The plan also discusses response actions that will be taken in the event of a chemical or oil discharge and the key personnel involved in cleanup. This BMP Plan is formatted to also serve as Stormwater Pollution Prevention Plan (SWPPP).

1.2 PLAN REVIEW AND UPDATE PROCEDURES

Facility Management will coordinate review and update procedures. The following changes will require revisions and updates to the BMP Plan:

- Commission or decommission of tanks.
- Replacement, reconstruction or movement of tanks.
- Construction or demolition that might alter secondary containment structures and or drainage systems.
- Revisions of standard operating or maintenance procedures at the Facility.
- A change in ownership.

The Facility shall amend the plan as necessary to address any sources or potential sources of pollution identified as a result of a Comprehensive Site Compliance Evaluation conducted according to Section 5.2 of this plan. The amended plan and all actions required by the plan shall be completed within 60 days of the date the Facility becomes aware or should have become aware that any of the conditions listed above has occurred.

1.3 PLAN DISTRIBUTION

Copies of the Plan shall be maintained at the Brooklyn Terminal. A copy will be available to the New York State Department of Environmental Conservation (NYSDEC) upon request.

2.0 GENERAL INFORMATION

2.1 TYPE OF FACILITY

The facility is an onshore storage terminal that receives and distributes gasoline, ethanol and gasoline additives. Specific facility information is provided in the terminal's Integrated Contingency Plan (ICP).

2.2 POLLUTION PREVENTION TEAM

The Terminal Manager assumes the responsibility for implementation, maintenance and revision of the BMP/SWPP Plan. The Terminal Manager and Terminal Superintendent/Supervisor serve as members of the BMP/Stormwater Pollution Prevention Team. Additional terminal and environmental personnel as designated by the Terminal Manager will assist in the development and implementation of the BMP/SWPP Plan as necessary. Emergency Contacts for the Terminal are provided in the ICP. Roles and responsibilities of the company responders are also detailed in the ICP.

2.3 EXTERNAL CONTACTS

The Facility will ensure that required notifications are made to federal, state and local agencies when appropriate. Internal and External Reporting requirements are outlined in the ICP.

2.4 SURFACE WATER PROXIMITY

The Facility is positioned adjacent to the Newtown Creek. The Newtown Creek empties into the East River. Maps and charts of the surface water bodies are incorporated in to the ICP.

2.5 SURFACE DRAINAGE

The facility is located on a relatively flat area. Drainage from the contained areas is addressed below. The Terminal Spill Prevention Control and Countermeasure (SPCC) Plan (the SPCC Plan is part of the ICP) also addresses the rate and direction of flow from potential spill areas. Rainfall onto the soil surfaces outside of the Terminal's operational area infiltrates into the soil or flows toward the Terminal's operational areas. All operational areas of the Terminal drain to the oil/water separator for treatment prior to discharge from the SPDES Discharge No. 001. Effluent monitoring is conducted for the following parameters:

- Flow
- Oil & Grease
- pH
- Benzene, Toluene, Ethylbenzene, Xylene(s) and MTBE

Drainage from Diked Areas

- The drainage from the diked storage areas is controlled by individual manual valves that are kept closed except when draining stormwater to the oil/water separator. The diked containment basins are isolated from the adjacent basins by dikes and the

manual valves. Water, which is drained from these areas, is directed to the oil/water separator system and eventually discharged at Outfall No. 001 under the Facility's SPDES Permit. All water to be discharged is visually inspected for presence of oil/sheen prior to the opening any valves. Any presence of oil/sheen is immediately reported to the Terminal Manager or the Terminal Supervisor.

- The dike walls and containment floors are constructed of reinforced concrete and the drainage system is constructed of a combination of catch basins and drainage piping. Drainage is restricted by valves as necessary to isolate the stormwater in the area which it accumulates.
- The terminal is fenced and areas are lighted to provide security and unauthorized tampering with equipment.

Drainage From the Undiked Areas

- Drainage from the truck loading rack flows to a primary oil/water separator that then discharges to the terminal's main oil/water separator.
- Rainwater accumulation on soil and grassy areas is allowed to percolate or evaporate. All areas within the terminal where stormwater can be potentially impacted drain to controlled operational areas or containment areas.
- Rainwater accumulation from the paved yard area collects in catchbasins and then drains to the main oil/water separator. The oil/water separator system provides treatment prior to discharge through the SPDES Outfall No. 1.

Areas that may reasonably be expected to affect stormwater quality at the site and drainage routes from these areas, are shown in the SPCC Plan and the FRP. The plans also include prevention measures that minimize the potential for surface water contamination by terminal operations.

3.0 POTENTIAL POLLUTANT SOURCES

3.1 IDENTIFICATION OF POTENTIAL POLLUTANT SOURCES & BEST MANAGEMENT CONTROLS

There is limited potential for the materials stored or processed on site to impact surface waters since most of the materials are contained within closed systems, such as tanks, pipes and other equipment. The significant materials that are handled and/or stored at the Terminal include: gasoline, ethanol and gasoline additives. In addition to these materials, small amounts of maintenance related materials are stored and used. These materials are stored inside buildings to prevent any contact with stormwater. Diesel fuel is not stored at the Terminal, but is contained in fuel tanks of the trucks that load at the Terminal. Figure 3.1 below is a narrative description of the materials, how the materials are handled and the Materials Management Practices (BMPs) employed to reduce the potential of these sources to contribute pollutants to stormwater discharges.

3.2 SPILLS & LEAKS

There have been no spills of toxic or hazardous substances by Motiva Enterprises at the Terminal. Spills that occur are reported and are to be documented as prescribed in the ICP. Please see the ICP for a listing of any potential spills or leaks.

3.3 MONITORING PROGRAM

Stormwater is monitored in accordance with the Terminal's SPDES Permit (No. NY0006131). Sampling data is reported in the monthly Discharge Monitoring Reports (DMRs) with copies of the reports and data kept in the Terminal's files. The monitoring parameters are noted in Section 2.5 of this plan.

FIGURE 3.1

**POLLUTANT SOURCE IDENTIFICATION AND
MATERIALS MANAGEMENT PRACTICES**

Material	Method/Location of Storage or Disposal	Materials Management Practices	Stormwater Diversion Control Measures	Stormwater Treatment
Gasoline and No. 2 Diesel Fuel	Gasoline: Pipeline, Dock lines and terminal transfer lines and hoses. Diesel Fuel: transfer lines, dispenser and hoses.	Corrosion protection, annual pressure testing, regular inspections as per SPCC Plan and lines equipped with gate valves/check valves	Lines within contained area which flows to oil/water separator	Yes. Except lines outside terminal containment and operational area
Gasoline, No. 2 Diesel Fuel and Gasoline Additives	(19) Aboveground Storage Tanks located throughout Facility	Corrosion protection, liquid level monitoring devices, high level alarms, regular inspections	Secondary containment berms	Yes, oil/water separator
Gasoline and Gasoline Additives	Truck Loading rack	Loading/unloading policy, warning signs, air brake interlock system, roof. See SPCC Plan for additional details	Depressed area surrounded by curbing drains to oil/water separator	Yes, oil/water separator
Fire Fighting Foam	Storage Tank and containers at foam room	Regular inspections and covered storage	Sealed containers	No
Drums (new material)	Stored at warehouse	Visual inspections	Stored indoors	No
Gasoline, No. 2 Diesel Fuel and No. 2 Fuel Oil (Heating Oil)	Dock (dock connection containment)	Hose testing, unloading procedures, USCG Dock Ops Manual, Best Management Practices (BMP's)	Collection trays/Containment basins	Yes, water to oil/water separator
Maintenance Materials (Lubricants, Detergents, Etc.)	Stored in small containers	Stored inside buildings	Materials covered and/or sealed	No
Waste Materials	In waste storage area and temporary satellite areas	Weekly inspection, suitable containers	Materials covered and/or sealed	No

4.0 MEASURES AND CONTROLS

4.1 GOOD HOUSEKEEPING

Facility personnel maintain the Facility in a neat and orderly condition:

- **Good housekeeping:** Procedures include, but are not limited to, remediating oil stained soil, maintaining the integrity of secondary containment areas, and minimizing/eliminating trash accumulation in storage areas.
- **Vehicle Maintenance:** The terminal has a vehicle maintenance bay. The vehicle maintenance bay is inside a building preventing potential contact with stormwater.
- **Vehicle or Equipment Washing:** The terminal maintains a vehicle wash bay. Drainage from the wash bay is treated by an oil/water separator and then discharges to the New York City sewer for treatment by the Public Owned Treatment Works (POTW).
- **Roof Areas:** There are no process activities at the Facility so roof areas are not subject to contamination from exhaust or vents.
- **Sediment and Erosion Control:** Areas surrounding outfalls are periodically inspected for sediment / erosion problems. Earthen dikes are regularly inspected as described in the SPCC plan.
- **Preventive Maintenance:** Regular inspections and preventive maintenance of pollution control measures is scheduled by Facility management (See Section 5.0 of this plan). The inspections noted insure preventive maintenance is performed and that potential deficiencies are noted and corrected.

4.2 SPILL PREVENTION AND RESPONSE PROCEDURES

Motiva has established procedures for responding to spills that occur at the Facility. These procedures include initial response actions, internal notifications and external notifications, implementation of the Incident Command System, disposal, and follow-up procedures. These procedures are outlined in the terminal FRP. Oil Spill Removal Organizations (OSROs) are under contract and will be activated if necessary. The OSROs are listed in the FRP.

The areas with the highest potential for spills are the tank farm, the truck loading rack, and the dock. Drainage for these areas is described in the SPCC Plan and the FRP. As noted previously, the tank farm and the truck loading rack are contained to prevent a potential release of products or potentially contaminated stormwater. Transfers of materials at the dock are performed using portable drip collection trays/basins. Several have the potential for contaminating stormwater have also been identified. These areas are discussed as follows:

- All storage tanks are within containment areas that have the capacity to hold the contents of the largest volume tank plus normal precipitation.
- All other products and chemicals and their containers are stored under a roof which minimizes potential stormwater contact.
- Hazardous and non-hazardous waste containers are kept closed and are stored under a roof.
- All dumpsters that are used to store waste materials are supplied with attached covers to minimize potential contact with stormwater.

4.3 EMPLOYEE TRAINING

Operators and other site personnel are instructed on their respective job responsibilities and duties.

- Site personnel are trained in the safe handling of materials and spill response procedures during safety meetings and annual safety training classes.
- Training classes include: HAZWOPER (OSHA 1910.120), HAZWOPER refresher training, hazard communications, first responder awareness, and hazardous waste training.
- Additional training is also discussed in the FRP and SPCC plans.

4.4 NON-STORMWATER DISCHARGES

All non-stormwater discharges are closely monitored for contaminants. A list of areas that have the potential to generate such discharges is shown in Figure 4.1. Facility management has taken every reasonable measure to ensure that potentially contaminated discharges do not leave the Facility.

4.5 MANAGEMENT OF RUNOFF

The use of appropriate pollution control measures are implemented when determined to be reasonable and appropriate. Appropriate pollution control measures at the Facility include dikes, sumps, oil/water separators, controlled drainage, corrosion protection (when applicable), roofs/covers, inspections, and training. Facility Management ensures that these pollution prevention measures are implemented and maintained at all times.

In addition to the measures implemented under the SPDES Permit, the Facility complies with applicable municipal stormwater programs developed under NPDES permits issued for the discharge of the municipal separate storm sewer that receives the facility's discharge (Note that no discharge of stormwater from the terminal to municipal stormwater drains presently occurs). These measures will be implemented during future expansion projects and areas of concern will be addressed prior to construction:

- Oil and sediment control structures or other devices will be used within the drainage system for all construction which occurs at this facility on or after the effective date of this general permit and/or may impact the drainage system.
- Removal of total suspended solids from new potential stormwater discharges will be incorporated in the design and installation of permanent stormwater management devices.
- Where possible, stormwater will be segregated from new operations to minimize potential impact.

FIGURE 4.1

EVALUATION OF NON-STORMWATER DISCHARGES

The terminal has the following non-stormwater discharges:

1. Tank bottom water
2. Truck loading rack wash down water
3. Tank hydrostatic test water

The tank bottom water is treated off-site at a permitted facility and the other water described above is treated by an oil/water separator prior to discharged in accordance with the terminal SPDES Permit No. NY0006131.

Review of other terminal water discharges:

1. Building roofs and the disposition of the associated runoff are listed below. Stormwater from the terminal roofs is not impacted by any processes or materials.

- Warehouse roof – stormwater to ground via gutters
- Office roof and employee building roof – stormwater to ground via gutters
- Loading rack canopy – to stormwater drainage system via piping

The above runoff would either percolate into surrounding soil or enter the stormwater drainage system through direct piping or flowing to a surface drain that flows to the stormwater drainage system, which then flows to the terminal's oil/water separator.

2. Sanitary sewage from restroom toilets, floor drains and sinks flows to the City of New York wastewater treatment system.
3. The warehouse and storage building areas do not have any floor drains.
4. Vehicle wash bay flows to an oil/water separator and to the City of New York wastewater treatment system.

5.0 INSPECTIONS

5.1 REGULARLY SCHEDULED INSPECTIONS

Regularly scheduled inspections of storage tanks, secondary containment berms, and response equipment are conducted as part of the regular SPCC procedures. A description of the inspections and inspection documentation are included in the SPCC Plan and the FRP.

5.2 COMPREHENSIVE SITE COMPLIANCE EVALUATION

Qualified personnel conduct site compliance evaluations at least once per year in addition to regularly scheduled inspections. Such evaluations include inspections of material handling areas and other potential sources of pollution identified in this plan, structural pollution prevention measures, and inspection of spill response equipment. These records will be retained as part of the BMP Plan for at least three years. A sample inspection form is located at the end of the Plan (BMP Form 1).

SITE COMPLIANCE EVALUATION REPORT

No Indicates Unsatisfactory Condition	Yes	No	Comments & Action Taken
Bermed Areas			
Waste Storage Area			
Hazardous and Non-Hazardous			
Review of Housekeeping Efforts (trash storage, chemical handling procedures, etc.)			
Survey Grounds for evidence of contamination (i.e., ditches, concrete areas, grass areas and gravel areas)			
Spill Response Equipment			
Foam Storage Area			
Drum Storage Area			
Pipelines			
Maintenance			
Docks			
Tanks			
Process Equipment			
Inspected By:		Date:	
Facility Manager		Date:	
COMMENTS:			

BMP Form 1

NOTE: Based upon the results of this evaluation, any changes in the potential pollutant sources at the terminal shall be incorporated in the SWPPP within 2 weeks of this evaluation. Any changes in the SWPPP pollution prevention measures shall be implemented within 12 weeks after this evaluation is completed.

New York State Department of Environmental Conservation
Major Oil Storage Facility - Site Inspection Report

08/7/06

NYSDEC MOSF #		Date of Inspection		MOSF License Expiration Date	
MOSF Inspection #		CBS #		Air Permit #	
				SPDES #	
Facility Name				Facility Owner	
Facility Address				Facility Owner Address	
Telephone Number				Telephone Number	
Facility Representative / Title				NYSDEC Representative / Title	

Tanks Inspected : Tank #				
RECORDS INSPECTION		Yes	No	X NOT APPLIC ABLE
(1) Does the facility have a Spill Prevention, Control and Countermeasures (SPCC) plan? (40 CFR 112.3 and 6NYCRR 610.4.a.(4))				
(2) Date of SPCC plan (40 CFR 112.5(b)) 6NYCRR 610.4.a.(4)				
(3) Is the SPCC plan signed by a NYS licensed and registered Professional Engineer? 6NYCRR 610.4.a.(4) (DER 11 Appendix B Attachment 3(d)3.a.)		Yes	No	X
(4) Is the SPCC plan approved by facility management? (40 CFR 112.3-7) 6NYCRR 610.4.a.(4)		Yes	No	X
(5) Does the facility have a Facility Response Plan (FRP)? (40 CFR 112.20) 6NYCRR 610.4.a.(4)		Yes	No	X
(6) Does the facility have a U.S. Coast Guard Operations Manual? (33 CFR ,154,156) 6NYCRR 610.4.a.(4)		Yes	No	X
(7) Are records of monthly ground water inspections available.?		Yes	No	X
(8) Is the license information current and correct (Article 12, Section 174)		specify deficiencies		
(9) Has the facility met the requirements of its general and special license conditions? (DER-11, Appendix B, Attachments 3b,3c,3d)		specify deficiencies		
(10) Date of last five year in-depth secondary containment system integrity inspection. (Der-11,Appendix B, Attachment 3(b), Special License Condition # 3j)				

<u>Aboveground Storage Tanks (ASTs)</u> <u>INSPECTION</u>	<u>RECORDS</u>	Yes	No					X
(11) Are monthly inspections performed for ASTs? (6 NYCRR 613.6 (a))								
Do the reports include: (12a) Inspection of exterior surfaces of tanks, pipes, valves or other equipment for leaks? (6 NYCRR 613.6 (a)(1))								
(12 b) Identify areas of the facility that need maintenance? (6 NYCRR 613.6 (a)(2))								
(12 c) Inspection and monitoring of leak detection systems, cathodic protection monitoring equipment and other warning systems in place? (6 NYCRR 613.6 (a)(3))								
(12 d) Are the monthly inspection reports signed by the tank inspector? (6 NYCRR 613.6 (c)(2)(vii))								
(13 a) Are ten year inspections performed for ASTs? (6 NYCRR 613.6 (b))								
(13 b) Are the ten year inspection reports signed by the inspector? (6 NYCRR 613.6 (c)(vii))								
(13 c) Do the inspections follow standard practices and procedures(API or STI as applicable)? (6 NYCRR 613.6 (b)(3)(iii))								

<p>(13 d) Was the NYSDEC notified prior to any major tank repairs or modifications?</p> <p>(General License Condition # 5)</p>	<p>Yes</p>	<p>No</p>					<p>X</p>
<p>(13 e) Were the major tank modifications designed by a NYS licensed and registered Professional Engineer?</p>	<p>Yes</p>	<p>No</p>					<p>X</p>
<p>(14) If motor fuel tank has pressurized piping, is it equipped with a shear valve ?</p> <p>(6 NYCRR 613.3 (c)(1))</p>	<p>Yes</p>	<p>No</p>					<p>X</p>
<p><u>Underground Storage Tanks (USTs)</u> <u>RECORDS</u></p> <p><u>INSPECTION</u></p> <p>(15) Is UST leak monitoring being performed (double wall tank - interstice is checked) ?</p> <p>1 (inoperative system) -</p> <p>2 (monitoring records not maintained) -</p> <p>3 (inappropriate method) (6 NYCRR 613.5(b)(3) - 614.5)</p>	<p>Yes</p>	<p>No</p>					<p>X</p>
		tank #					
		violation					
<p>(16) Is cathodic protection for steel UST and piping systems monitored annually?</p> <p>1 (no monitoring on tank)-</p> <p>2 (no monitoring on line) -</p> <p>3 (records not maintained) -</p> <p>4 (system not maintained to achieve protection) -</p> <p>5 (inadequate method) (6 NYCRR 613.5 (b)(2))</p>	<p>Yes</p>	<p>No</p>					<p>X</p>
		tank #					
		violation					
<p>(17) Has tightness testing been conducted on the tank and piping system? Check for both tank and piping.</p> <p>1 (entire tank not tested) -</p> <p>2 (piping system not tested) (6 NYCRR 613.5 (a))</p>	<p>Yes</p>	<p>No</p>					<p>X</p>
<p>(18) Are annual cathodic protection reports available?</p> <p>(6 NYCRR 613.5 (b)(4))</p>	<p>Yes</p>	<p>No</p>					<p>X</p>
<p>(19) Does the inspection report indicate that cathodic protection is operating properly?</p> <p>(ECL Art. 17, Title 10, Section 1007.1) (6 NYCRR 613.5 (b)(3))</p>	<p>Yes</p>	<p>No</p>					<p>X</p>

(20) Inventory records for metered USTs: 1 (no records) - 2 (poor equipment) - 3 (no reconciliation) - 4 (reconciliation performed other than 10 days) - 5 (no investigation of discrepancy) (6 NYCRR 613.4 (a)(1), 613.4 (c), 613.4 (d))	Yes	No					X	
	tank #							
	violation							
<u>Aboveground Storage Tanks (ASTs)</u> <u>INSPECTION</u> (21) Is there a gauge, high level alarm or other equivalent device for AST? N (no) - 1 (inoperative) - 2 (gauge) - 3 (high level alarm) or 4 (other equivalent device; indicate) (6 NYCRR 613.3 (c)(3)(i) & (iii))	OUTDOOR		tank #					
	Alarm							
(NYCRR 613.3 (c)(3)(i) & (iii)) (22) Is the design/working capacity and identification number marked on AST and at gauge? (6 NYCRR 613.3 (c)(3)(ii))	Yes	No					X	
(23) Is solenoid or equivalent valve in place for gravity fed motor fuels dispensers? (6 NYCRR 613.3 (c)(2))	Yes	No					X	
(24) Were any unreported spills observed during the inspection? (6 NYCRR 613.8)								
(25) Are check valves in place for pump filled tanks with remote fills? (6 NYCRR 613.3 (c)(4))	Yes	No					X	
(26) Are operating valve in place on every line with gravity head? (6 NYCRR 613.3 (c)(5))	Yes	No					X	
(27) If the tank is in service or temporarily out-o- service, is there a need for maintenance? (6 NYCRR 613.9 (a)(2))	Yes	No					X	

<p>(28) Are the cathodic protection monitoring ports connected and reports available to indicate that the system is working properly?</p> <p>(6 NYCRR 614.3 (e)(5))</p>	<p>No</p>	<p>Yes</p> <table border="1"> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>																				<p>X</p>
<p>(29) Are dike drain valves locked in closed position?</p> <p>(6 NYCRR 613.3 (c)(6)(iii))</p>																						
<p>(30). Tank installed after 12/86, tank system meets standards . If no, missing items? Y/N/X ASTs must</p> <p>(1) be welded steel</p> <p>(2) have surface coating (paint),</p> <p>(3) if on ground have cathodic protection and</p> <p>(4) if on ground have an impermeable barrier under the tank and have the ability to monitor for leaks between tank bottom and barrier.</p> <p>(6 NYCRR 614.9-11)</p>	<p>Yes</p>	<p>No</p> <table border="1"> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>																				<p>X</p>
<p>(31) Type of Secondary Containment (ASTs) - Secondary containment constructed of:</p> <p>0 - (None)</p> <p>1- (concrete)</p> <p>2- (native soil with clay)</p> <p>3- (synthetic liner)</p> <p>4- (steel))</p> <p>5- (asphalt)</p> <p>6- (asphalt with sealant)</p> <p>7- (geomembrane liner)</p> <p>8- (clay with ballast)</p> <p>9- (other; indicate)</p> <p>(6 NYCRR 613.3 (c)(6))</p>	<p>tank #</p>																					
	<p>construction</p>																					
<p>(32) Are permanently out-of-service tanks closed properly?</p> <p>(6 NYCRR 613.9 (b))</p>	<p>Yes</p>	<p>No</p> <table border="1"> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>																				<p>X</p>
<p>(33) Does transfer area/ loading rack area have secondary containment?</p> <p>(40CFR 112 .7(c))</p>	<p>Yes</p>	<p>No</p> <table border="1"> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>																				<p>X</p>
<p>(34) Does transfer area/ loading rack area secondary containment need repair?</p> <p>(6NYCRR 613.3.d)</p>																						

(40) Remarks / Comments (Continued)

DOCUMENT INFO

17

18

27

31

37

DocID: 00000315

Filename: 58603-2009-03-31-COR-01 (SPDES Action Plan - Motiva).pdf 38

March 31, 2009

VIA FAX AND US MAIL

New York State Department of Environmental Conservation
Division of Water, Region 2
Attention: Vichit Aramsombatdee
47-40 21st Street
Long Island City, NY 11101-5407

**SUBJECT: NYSDEC INSPECTION/NOTICE OF VIOLATION
MOTIVA ENTERPRISES LLC – BROOKLYN TERMINAL
FEBRUARY 11, 2009 INSPECTION
SPDES PERMIT NO. NY0006131**

Dear Mr. Aramsombatdee:

This is in response to your February 12, 2009 letter regarding the subject SPDES Inspection. Based on your inspection, you noted three items requiring corrective action. An action plan or response for each item is included below:

- The Department requests a Comprehensive Action Plan to prevent the discharge of Benzene, Toluene, Ethylbenzene and Xylene(s) (BTEX) at levels higher than the Action Levels of 0.1 mg/l.
 - As an interim measure, the terminal will continue routine inspections of the oil/water separators and clean the separators as necessary to minimize the potential for product contacting stormwater prior discharge.
 - As a long-term solution, Motiva Enterprises LLC (Motiva) proposes to evaluate the existing truck loading rack stormwater collection and treatment system. Based on the evaluation, treatment system improvements will be designed and installed. Initial conceptual improvements for the system include the installation of granular activated carbon to treat potential BTEX concentrations. The proposed schedule for the work is as follows:

1. Evaluation of the existing system and identification and design of appropriate improvements will take approximately 2 – 3 months (Estimated Completion June 30, 2009)
 2. Review and approval by the City of New York (6 – 9 months)
 3. Construction of system improvements 3 months (Depending on timely approvals being received by the City of New York, Motiva proposes to complete construction by March 31, 2010 or earlier. However, any delay in approvals required by the City of New York will delay completion accordingly).
- Use of unapproved method to analyze Benzene, Toluene, Ethylbenzene and Xylenes – I am not quite clear what the Department is requesting with regard to the October 16, 2006 analysis. Motiva understands that the method SW 846 8260 was inadvertently used to analyze the sample in question. Motiva has made note of this and informed our contract laboratory that such future samples should be analyzed using only EPA Method 624. Unfortunately, due to the time that has elapsed, the 2006 sample cannot be reanalyzed. It should be noted that Method 8260, although not the specified method, is similar in that it is a GC/MS method with similar detection limits. The results did demonstrate that the levels of all potential contaminants were below levels that could pose substantial environmental harm.
 - The facility Best Management Practices Plan needs to be updated – the plan will be updated by April 30, 2009.

Please call me at (856) 810-7720 if have any questions regarding this response or the proposal for addressing BTEX at the Brooklyn Terminal.

Sincerely:



David L. Bier
Field Environmental Coordinator

cc: J. W. Lintz/F. Signoriello – Motiva – Brooklyn, NY

MOTIVA
ENTERPRISES LLC

TO: VICHIT ARAMSOMBATDEE, PE
NYS DEC

FAX NO. 718-482-6516

TEL. NO. 718-482-4933

FROM:

MOTIVA ENTERPRISES LLC
ATTN: DAVID L. BIER
PO BOX 736
MARLTON, NJ 08054

TEL. (856) 810 - 7720

FAX NO. (856) 810 - 7721

MESSAGE: DEAR MR. ARAMSOMBATDEE -
ATTACHED IS IN RESPONSE TO YOUR
INSPECTION OF THE MOTIVA BROOKLYN
TERMINAL ON FEB. 11, 2009. PLEASE
CALL ME IF YOU WOULD LIKE
TO DISCUSS. THANK YOU,
Dave Bier

PO Box 736

Marlton, NJ 08053

Phone: (856) 810-7720

Fax: (856) 810-7721

Shell/Motiva 0008171

New York State Department of Environmental Conservation

Division of Water, Region 2

47-40 21ST Street, Long Island City, NY 11101-5407

Phone: (718) 482-4933 • FAX: (718) 482-6516

Website: www.dec.ny.gov



Alexander B. Grannis
Commissioner

CERTIFIED MAIL NO. 7005 0390 0004 3765 4375 WITH RETURN RECEIPT REQUESTED

February 12, 2009

Mr. Frank Signoriello, Terminal Supervisor
Motiva Enterprises LLC
25 Paidge Avenue
Brooklyn, NY 11222

RE: NOTICE OF VIOLATION
SPDES Permit No. NY 0006131
Annual Compliance Inspection

Dear Mr. Signoriello:

On February 11, 2009 the referenced facility was inspected for the purpose of evaluating its compliance with the requirements of its permit issued under the State Pollution Discharge Elimination System (SPDES) and Article 17 of the Environmental Conservation Law.

The following items were noted during the inspection:

A review of the facility's discharge monitoring reports for Benzene, Toluene, Ethylbenzene, and Xylenes from the period January 2007 to December 2008 indicated the following:

Outfall	Parameter	Reported Value	Action Level	Period
001	Ethylbenzene	0.17 mg/l	0.1 mg/l	2/07 to 4/07
	Toluene	1.1 mg/l	0.1 mg/l	2/07 to 4/07
	Xylenes	0.92 mg/l	0.1 mg/l	2/07 to 4/07
001	Benzene	1.0 mg/l (6/28/07); 0.19 mg/l (7/18/07)	0.1 mg/l	5/07 to 7/07
	Ethylbenzene	0.44 mg/l (6/28/07); 0.29 mg/l (6/27/07); 0.23 mg/l (7/18/07)	0.1 mg/l	5/07 to 7/07
	Toluene	6.7 mg/l (6/28/07); 0.76 mg/l (6/27/07); 2.1 mg/l (7/18/07)	0.1 mg/l	5/07 to 7/07
	Xylenes	3.7 mg/l (6/28/07); 0.66 mg/l (6/27/07); 1.18 mg/l (7/18/07)	0.1 mg/l	5/07 to 7/07

Outfall	Parameter	Reported Value	Action Level	Period
001	Toluene	0.56 mg/l (11/6/07); 0.12 mg/l (11/20/07)	0.1 mg/l	11/07 to 1/08
	Xylenes	0.35 mg/l (11/6/07)	0.1 mg/l	11/07 to 1/08
001	Toluene	0.33 mg/l (6/5/08)	0.1 mg/l	5/08 to 7/08
	Xylenes	0.36 mg/l (6/5/08)	0.1 mg/l	5/08 to 7/08

The facility's SPDES permit page 3 of 9 states "If levels higher than the actions levels are confirmed the results shall constitute an application for permit modification and the permit may be reopened for consideration of revised action levels or effluent limits."

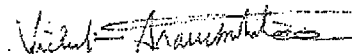
Based on the results shown above, the Benzene, Toluene, Ethylbenzene, Xylenes levels higher than the action levels of 0.1 mg/l are confirmed. The Department shall proceed with the facility permit modification. **In the interim, in order to prevent the discharge of Benzene, Toluene, Ethylbenzene, Xylenes levels higher than the action levels of 0.1 mg/l which may cause or contribute to a violation of water quality standards, the Department requests that a Comprehensive Corrective Action Plan be submitted to this office for review and approval by March 31, 2009. The plan must include a proposed schedule for implementation of the recommended corrective action.**

- The facility still has not rectified the problem of using the unapproved method to analyze Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX). The BTEX hydrostatic test samples collected on October 16, 2006 were analyzed by the method SW 846 8260. NYSDEC had already informed the facility twice in the compliance inspection reports (first notification: September 12, 2005 (Mr. Mario A. D' Antonio); second notification: June 6, 2006 (Mr. E.D. Bernhard Jr.)) that the method SW 846 8260 is unapproved method and it is not authorized under the 40 Code of Federal Regulations (CFR) Part 136. Please inform the laboratory that the approved method for BTEX analysis under 40 CFR Part 136 is EPA method number 824.
- The facility Best Management Practices (BMP) Plan needs to be updated to reflect the recent changes at the facility.

The Department reserves its right to initiate an enforcement actions for the items noted in this Notice of Violation.

If you have any further questions, please contact me at (718) 482 4946.

Very truly yours,



Vichit Aramsombatdee, PE
Environmental Engineer 2
Region 2, Division of Water

cc: Robert Elburn, PE, Regional Water Engineer;
Selvin Southwell, PE, Deputy Regional Water Engineer

DOCUMENT INFO

DocID: 00000316

Filename: 58603-2009-04-01-OTH-01 (Emissions
Inventory 2008 - Trinity).pdf



INSTRUCTIONS 2008 EMISSION STATEMENT

This 2008 Emission Statement package was sent to you because the New York State Department of Environmental Conservation (Department) has identified that your facility is required to obtain a Title V permit pursuant to Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Subpart 201-6.

The federal Clean Air Act (§182(a)(3)(B), §502(b)(3)), State Environmental Conservation Law (§72-0303) and 6 NYCRR 202-2, "Emission Statements," requires your facility to report emissions annually and pay a permit fee based on the actual total tonnage of emissions. The information on this form allows the Department to calculate the emissions from your facility and report these emissions in the required format to the United States Environmental Protection Agency and the Great Lakes Commission.

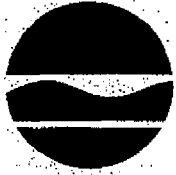
Your 2009 permit fee will be based on your reported 2008 actual emissions as confirmed by the Department. This statutory fee is redetermined annually and published as a rule by the Department.

If you do not respond to this survey, you will be in violation of the Environmental Conservation Law, **enforcement action will be initiated** and your fee will be based on your maximum permitted emissions. Fees based on your maximum permitted emissions may be much higher than fees based on your actual emissions. The Department will send an invoice for fees at a later date.

The Department developed the 2008 emission statements from information contained in the Air Facility System (AFS). AFS contains your facility's permit data from information provided to the Regional NYSDEC Offices through permitting applications and modifications.

If there are any questions regarding this form, please call Ronald Stannard or members of his staff at 518-402-8396.

You may request that information submitted in emission statements be designated as a trade secret in accordance with Public Officers Law §87(2)(d) and 6 NYCRR Part 616. Data elements not considered trade secrets include: facility emissions, estimated emissions method, and Source Classification Code (SCC). The Department will evaluate claims of confidentiality in accordance with Part 616.



INSTRUCTIONS 2008 EMISSION STATEMENT

**COMPLETED EMISSION STATEMENTS MUST BE SUBMITTED TO THE
DEPARTMENT AND POSTMARKED ON OR BEFORE APRIL 15, 2009 TO THE
ATTENTION OF:**

Ronald W. Stannard, P.E.
New York State Department of Environmental Conservation
Division of Air Resources
625 Broadway
Albany, NY 12233-3251

Section 1 - Certification

Emission statements must include certification by a representative of your facility. The certification must include the full name, original signature, date of signature and telephone number of the representative.

Emission statements must also include facility level information consisting of:

- verification of facility owner
- verification of full name of facility
- verification of street address (physical location) of facility
- verification of the four digit SIC for the facility
- verification of DEC ID

Make necessary changes directly on the emission statement by crossing out the incorrect information and writing in the correct information. For blank emission statements, please complete all of the above information. If either the fuel/combustion and incineration or industrial process section is not applicable to your facility, sign the certification and indicate that this section is not applicable to your facility.

You are required to report all emissions at your facility except emissions from the following activities:

- a. On-road internal combustion engines (cars, buses, trucks).
- b. Non-road internal combustion engines (lawn and garden equipment, light mobile commercial welders, forklifts).
- c. Surface cleaning/degreasing for janitorial purposes other than of industrial



INSTRUCTIONS 2008 EMISSION STATEMENT

machines.

- d. Architectural surfacing coatings (building/house paint).
- e. Asphalt paving.
- f. Commercial/consumer solvent use (household products, toiletries, aerosol products, polishes, pesticides, nonindustrial adhesives and space deodorants).

Section 2 - 2008 Facility Fuel Use Reporting Form

Section 2.1 - Facility Fuel Use (Combustion and Incineration)

Report all of your facility's fuel consumption by fuel type. This should include fuel consumed from exempt and non-exempt sources. Report the corresponding sulfur content and heat value of each fuel burned in 2008. If necessary, contact your fuel supplier to obtain heat value and sulfur content information. Be certain to report the correct quantity of fuel with the appropriate units. Reported fuel in Section 2.1 should equal the sum of all fuel reported in Section 2.3 and Section

4.

Section 2.2 - Combustion and Incineration Process Emissions Summary (OPTIONAL)

Section 2.2 is OPTIONAL. Report the 2008 emissions total of each contaminant from your facility for combustion and incineration processes. The emissions total for each contaminant reported here should equal the sum of actual emissions reported in Section 2.3. Blank spaces are provided for corrections or additions to the list of contaminants.

Use Table 2 (Chemical Family Code) to determine the criteria group to which each contaminant belongs. This will enable you to determine how each contaminant contributes to your facility's emissions totals. To calculate your facility's total emissions for 2008 subject to emission fees, add actual totals for all the contaminants except those with chemical family codes of 5 and 6.

Please note: Chemical families 1, 7, 8, and 11 will be billed as Particulates and chemical families 4 and 9 will be billed as Volatile Organic Compounds.



INSTRUCTIONS 2008 EMISSION STATEMENT

Section 2.3. - Combustion and Incineration Process Emissions

Report all emissions (stack and fugitive) from combustion and incineration activities for all emission units and processes. Information from permits for most or all emission processes has been provided with descriptions of the process, including Source Classification Codes (SCCs).

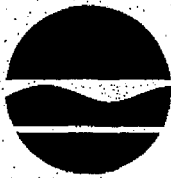
In order to streamline the emission statement, the Department has included a number of exempt sources in the section of the statement that pertains to that source. Only those processes that have been entered into AFS as exempt will have an exempt identifier. Other exempt processes may not contain the exempt identifier and will appear in the statement with all remaining sources at the facility. The emissions from all other exempt sources not identified in the statement must be reported in Section 4 "Periodic Inventory Blank Reporting Forms."

Please note, reporting of emissions data for exempt processes is required this year. If you believe that a process listed in your emission statement, which is not marked as exempt, is now exempt pursuant to 6 NYCRR 201-3.2, report the emissions from that activity where it is listed in the emission statement. Clearly indicate in both the total emissions section and at the emission unit that it may be exempt. The Department will review the information provided, determine whether the process is exempt and notify your facility.

If your facility has other fuel combustion and incineration emission processes that are not listed in Section 2.3, use the Blank Form provided at the end of this section for submitting emissions. The Blank Form may also be used to report emissions in cases where you would need to correct or rewrite information.

Report and/or verify the following information for each emission unit:

- Emission unit number and total heat input for the emission unit. The Emission unit assigned by the Department corresponds to either the emission point number on your current state facility permit or to the Emission Unit number assigned under your Draft or Issued Title V permit. Total heat input is the sum of the maximum heat input (million Btu per hour) for all processes at the Emission Unit.
- The ID number, size and a description of the unit. This is your ID, maximum rated capacity (e.g., MMBtu/hr, brake horsepower-hour), and usually the manufacturer's name.
- Control equipment description and overall control efficiency of the equipment for that process. The description refers to the type of equipment (e.g., baghouse, scrubber, flue gas desulfurization). Efficiency for each criteria pollutant considers the equipment's actual control **including downtime and maintenance degradation.**



INSTRUCTIONS 2008 EMISSION STATEMENT

- Fuel burned. This information corresponds to a Source Classification Code (SCC) that describes the process and the fuel. The Department will assign an SCC based on information provided. An emission unit may have several SCCs (usually one for each type of fuel).
- Operational data for each SCC.

Annual Average

- On average, the hours per day and days per week the equipment at this emission process operated on this fuel.
- The number of weeks in 2008 the equipment at this emission process operated on this fuel.

Percent fuel use by season

- The percentage of total fuel burned in 2008 for this SCC for the three month periods (the sum of the percentages must equal 100%):
 - December 2008, January and February 2008
 - March - May 2008
 - June - August 2008
 - September - November 2008

Jun. - Aug. and Jan. Feb. & Dec. of 2008

- On average, the hours per day and days per week the equipment at this emission process operated on this fuel.
 - The number of days during this period the sources at this emission process operated on this fuel.
- Reporting the emissions corresponding to the fuel burned at each SCC is OPTIONAL. If this section is not completed, the Department will use federal emission factors to calculate emissions. If you choose to report emissions for a specific SCC, report emissions by criteria pollutant in pounds per year and list under HD (How Determined) the method code from Table 1 below. If published emission factors were used, state the emission factor and its source (i.e., AP-42, FIRE, TANKS, etc.).



INSTRUCTIONS 2008 EMISSION STATEMENT

TABLE 1

HD - How Determined (Estimated Emissions Method Code)

- | | |
|---|--|
| 1 | Stack test of emissions |
| 2 | Material balance calculations or fuel analysis |
| 3 | Published emission factors |
| 4 | Best engineering judgement |
| 5 | Stack test of emissions from identical emission source |
| 6 | Stack test of emissions from geometrically similar emission source |
| 7 | Continuous stack monitoring |
| 8 | Modeling/Estimation Software (TANKS, LAEEM, etc.) please specify |
| 9 | Manufacturer's guarantee |

Section 3 - Industrial Process Facility Emissions Forms

If your emission statement includes general emission categories such as Unspecified VOC or Unspecified Particulates (these have replaced all generic VOC and particulate CAS Codes used in the past) instead of specific contaminants, you need only report the emissions of these general categories and not attempt to identify each specific contaminant individually by CAS Code **(Please note that this does not apply to HAPs and to HAPs that are also VOCs or particulates, HAPs must be reported by CAS Code)**. This does not relieve you of the responsibility of reporting all non-exempt emissions at your facility and the individual contaminants shown on the emission statement.

Section 3.1 - Industrial Emissions Summary

Report all 2008 emissions (stack and fugitive) of each contaminant from your facility for industrial processes. The emissions total for each contaminant reported here should equal the sum of actual emissions reported in Section 3.2. **Do not include emissions from exempt activities.** Blank spaces are provided for corrections or additions to the list of contaminants.

Use Table 2 below (Chemical Family Code) to determine the criteria group to which each contaminant belongs. This will enable you to determine how each contaminant contributes to your facility's emissions totals. To calculate your facility's total emissions for 2008 subject to emission fees, add actual totals for all the contaminants except those with chemical family codes of 5 and 6. Report all of your facility's actual emissions by CAS Code. Blank spaces are provided for corrections or additions to the list of contaminants.



INSTRUCTIONS 2008 EMISSION STATEMENT

TABLE 2

Chemical Family Code

- | | |
|----|--|
| 1 | Particulates (PART) |
| 2 | Sulfur Dioxide (SO ₂) |
| 3 | Nitrogen Oxides (NO _x) |
| 4 | Volatile Organic Compounds (VOC) |
| 5 | Carbon Monoxide (CO) |
| 6 | Other |
| 7 | PM-10 |
| 8 | PART and Hazardous Air Pollutant (HAP) |
| 9 | VOC and HAP |
| 10 | HAP Only |
| 11 | PM 2.5 |

Please note: Chemical families 1, 7, 8, and 11 will be billed as Particulates and chemical families 4 and 9 will be billed as Volatile Organic Compounds.

Section 3.2. Industrial Process Emissions

Report all emissions (stack and fugitive) from industrial activities for all emission units and processes. Information from permits for most or all emission processes has been provided with descriptions of the process, including Source Classification Codes (SCCs).

In order to streamline the emission statement, the Department has included a number of exempt sources in the section of the statement that pertains to that source. Only those processes that have been entered into AFS as exempt will have an exempt identifier. Other exempt processes may not contain the exempt identifier and will appear in the statement with all remaining sources at the facility. The emissions from all other exempt sources not identified in the statement must be reported in Section 4 "Periodic Inventory Blank Reporting Forms."

Please note, reporting of emissions data for exempt processes is required this year. If you believe that a process listed in your emission statement, which is not marked as exempt, is now exempt pursuant to 6 NYCRR 201-3.2, report the emissions from that activity where it is listed in the emission statement. Clearly indicate in both the total emissions section and at the emission unit that it may be exempt. The Department will review the information provided, determine whether the process is exempt and notify your facility.



INSTRUCTIONS 2008 EMISSION STATEMENT

If your facility has other industrial emission processes that are not listed in Section 3.2, use the Blank Form provided at the end of this section for submitting emissions. The Blank Form may also be used to report emissions in cases where you would need to correct or rewrite information.

Report and/or verify the following information for each emission unit:

- Emission unit number. The Emission unit number corresponds to either the emission point number assigned by the Department on your current state facility permit or to the Emission unit number assigned under your Draft or Issued Title V permit.
- Verify the SCC Code by ensuring the SCC Description matches the process at that emission unit. Make any necessary corrections. The Department will assign an SCC based on your description.
- Annual throughput should be reported in the units shown under throughput units. If you wish to use alternative throughput units, clearly indicate this directly on the form.
- The Unit Description identifies the equipment used in the process at that emission unit. Make any necessary corrections to this information.
- Control equipment description and the overall control efficiency of the equipment for that emission process. The description refers to the type of equipment (e.g., catalytic oxidizer, flare, scrubber). Efficiency for each criteria pollutant considers the equipment's actual control **including downtime and maintenance degradation**.
- Operational Data.

Annual Average

- On average, the hours per day and days per week the equipment at this emission process operated.
- The number of weeks in 2008 the units at this emission process operated.

Percent operation by season

- The percentage of total process rates in 2008 for this SCC for the three month periods (**the sum of the percentages must equal 100%**):
 - December 2008, January and February 2008
 - March - May 2008
 - June - August 2008
 - September - November 2008



INSTRUCTIONS 2008 EMISSION STATEMENT

Jun. - Aug. and Jan. Feb. & Dec. of 2008

- On **average**, the hours per day and days per week the equipment at this emission process operated.
- The number of days during this period the units at this emission process operated.
- Actual Emissions by CAS Code for SCC. The actual emissions for each contaminant at the process must be reported in pounds per year. If your emission statement includes general emission categories such as Unspecified VOC or Unspecified Particulates (these have replaced all generic VOC and particulate CAS Codes used in the past) instead of specific contaminants, you need only report the emissions of these general categories and not attempt to identify each specific contaminant individually by CAS Code (**Please note that this does not apply to HAPs and to HAPs that are also VOCs or particulates, HAPs must be reported by CAS Code**). Report the method used to determine your emissions by using the appropriate HD code found in Table 1.

Section 4 - Periodic Inventory Blank Reporting Forms

(This section is for inventory purposes only. Emissions from these categories will not be used for billing.)

Report NO_x, VOC, and CO emissions from your facility's exempt activities. Exempt activities are identified in 6 NYCRR Part 201, "Permits and Certificates," Section 201-3.2. Emissions from these sources should be estimated and provided for each process indicated as exempt in your emission statement. Emissions from all other exempt sources must be reported on the blank forms located in Section 4. Care should be taken to ensure that each activity is reported and identified by the exemption category that best describes the activity. Emissions may be aggregated for activities that fall under the same exemption category.

Please note, if you feel an Emission Unit or activity that is identified in your emission statement is now exempt pursuant to 6 NYCRR Part 201, report the emissions from that activity where it is listed in the emission statement. Clearly indicate in both the total emission section and at the emission unit that it may be exempt. The Department will review the information provided and determine whether the process is exempt and review the results with your facility.

Quantify your actual emissions in pounds per year for NO_x, VOC and CO and indicate the method in which emissions were determined by listing the appropriate HD number found in Table 1 on page 6. Because of the number of units that can be covered by one exemption description, control equipment information is not asked for. Actual emissions reported should



INSTRUCTIONS 2008 EMISSION STATEMENT

take into account any removal efficiency provided by a control device.

The following information should be provided in Section 4 to satisfy your periodic inventory requirements:

- An estimation of the Process Rate or Fuel quantity should be provided. This should be done in the appropriate units for the activity described. This is the total annual process rate for the activity described. If you cannot provide the Process Rate in the Process Units requested, you must report the information in Process Units acceptable to you and clearly indicate those units.
- Estimation of Actual Emissions for NO_x, VOC, and CO. The emissions for each contaminant at the process must be reported in pounds per year. Indicate the method in which emissions were determined by listing under HD the appropriate method code found in Table 1 on page 6.
- Operational Data.

Annual Average

- On average, the hours per day and days per week the units at this emission point operated.
- The number of weeks in 2005 the units at this emission point operated.

2008 EMISSIONS INVENTORY
MOTIVA ENTERPRISES, LLC ■ BROOKLYN TERMINAL

Prepared by:

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April 2009

Project 093101.0009

Trinity 
Consultants

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THE STATE OF NEW YORK 2008 EMISSION STATEMENT**

1. EXECUTIVE SUMMARY

Motiva Enterprises LLC (Motiva) operates a bulk gasoline terminal in Brooklyn, New York. The air emission sources at the Brooklyn Terminal include eighteen storage tanks, loading racks, a vapor recovery unit (VRU), fugitive emissions from components such as pump seals, valves, and connectors and two combustion-heating units. This report contains the completed 2008 emissions inventory for Motiva's Brooklyn Terminal.

TABLE 1-1. PETROLEUM UNIT EMISSIONS INVENTORY SUMMARY

Source	VOCs			HAPs	HAP Speciation									1,2,4-Trimethylbenzene
	VOC	VOC	VOC		Benzene	Ethylbenzene	Hexane	Isocetane	MTBE	Toluene	Xylenes	Naphthalene		
	Ozone	Annual	Annual										Annual	
	(lb/day)	(tpy)	(lb/yr)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	
Loading Rack														
VRU Emissions	13.29	2.51	5,016.74	0.064	0.002	0.002	0.013	0.021	0.005	0.006	0.014	1.5E-07	0.000	
Rack Fugitives	85.52	16.14	32,281.69	0.267	0.030	0.004	0.089	0.00	0.029	0.070	0.023	3.2E-05	0.002	
Process Fugitives	6.11	1.11	2,229.90	0.019	0.003	0.0003	0.006	0.00	0.002	0.005	0.002	2.2E-06	0.000	
Storage Tanks	30.68	6.74	13,473.59	0.112	0.022	0.002	0.036	0.00	0.011	0.030	0.011	1.3E-05	0.001	
Heater	0.02	0.00	7.46											
Totals	135.6	26.5	53,009.38	0.462	0.075	0.009	0.144	0.021	0.047	0.111	0.050	0.0000	0.003	
Totals (lb/day)	1E+11.01	53,009.982		924.271	156.10	13.81	288.12	41.40	93.85	221.49	99.17	0.09	5.23	

* VOC emissions are calculated on a lb/day basis for the peak ozone season – June 1st through August 31st.

TABLE 1-2. COMBUSTION UNIT EMISSIONS INVENTORY SUMMARY

Pollutant	(lb/yr)
Particulate Matter	10.306
Sulfur Dioxide	0.814
Nitrogen Oxides	135.611
Carbon Monoxide	113.913
VOC	7.459

The Brooklyn Terminal 2008 emissions from the petroleum emission units totaled 26.5 tons of volatile organic compounds (VOCs) and 0.46 tons of hazardous air pollutants (HAPs). In addition, the Brooklyn Terminal emitted 135.6 pounds per day of VOCs during the peak ozone season. The inventory emissions are broken down into three emission source categories: loading rack emissions, process fugitive emissions, and storage tank emissions. The loading rack emissions are further broken down into VRU and fugitive rack emissions and are based on a VRU rating of 1.93 mg/L (10/18/07 performance test). The storage tank and loading rack emissions are also broken down by petroleum product. HAP speciation based upon "reformulated" gasoline speciation profiles are provided. Combustion unit emissions are based on 1.36 MMSCF of natural gas combusted during 2008. Note that the individual emission source categories may not add up to the total emission amounts due to significant digit rounding.

The detailed emissions inventory calculation spreadsheets are included in Appendix A. These spreadsheets provide all necessary information regarding theories, methodologies, references, assumptions, and estimations employed in estimating 2008 emissions from the Brooklyn Terminal. The spreadsheets included are:

- 2008 Throughput and Turnover Calculations
- 2008 HAP Speciation Data
- 2008 Annual Emissions – Loading Racks
- 2008 Ozone Season Emissions – Loading Racks
- 2008 Annual Emissions – Fugitives
- 2008 Ozone Season Emissions – Fugitives
- 2008 Annual Emissions – Storage Tanks
- 2008 Ozone Season Emissions – Storage Tanks
- 2008 Combustion Emissions – Garage Heater

The TANKS 4 output sheets are included in Appendix B. The State of New York 2008 Emission Statement forms are included in Appendix C.

APPENDIX A

EMISSIONS INVENTORY CALCULATIONS

Motiva Enterprises, LLC

Trinity Consultants

**MOTIVA ENTERPRISES, LLC BROOKLYN TERMINAL
SUMMARY OF EMISSIONS - 2008**

Source	VOCs			HAPs Annual (tpy)	HAP Speciation								
	VOC Ozone (lb/day)	VOC Annual (tpy)	VOC Annual (lb/yr)		Benzene Annual (tpy)	Ethylbenzene Annual (tpy)	Hexane Annual (tpy)	Isooctane Annual (tpy)	MTBE Annual (tpy)	Toluene Annual (tpy)	Xylenes Annual (tpy)	Naphthalene Annual (tpy)	1,2,4- Trimethyl benzene Annual (tpy)
Loading Rack													
VRU Emissions	13.29	2.51	5,016.74	0.064	0.002	0.002	0.013	0.021	0.005	0.006	0.014	1.5E-07	0.000
Rack Fugitives	85.52	16.14	32,281.69	0.267	0.050	0.004	0.089	0.00	0.029	0.070	0.023	3.2E-05	0.002
Process Fugitives	6.11	1.11	2,229.90	0.019	0.003	0.0003	0.006	0.00	0.002	0.005	0.002	2.2E-06	0.000
Storage Tanks	30.68	6.74	13,473.59	0.112	0.022	0.002	0.036	0.00	0.011	0.030	0.011	1.3E-05	0.001
Heater	0.02	0.00	7.46										
Totals	135.6	26.5	53,009.38	0.462	0.078	0.009	0.144	0.021	0.047	0.111	0.050	0.0000	0.003
Totals (lb/yr)	12,477.871	53,009.382		924.271	156.10	18.81	288.12	41.40	93.85	221.49	99.17	0.09	5.23

MOTIVA ENTERPRISES, LLC BROOKLYN TERMINAL 2008 COMBUSTION UNIT EMISSIONS

Natural gas used for terminal comfort heaters in 2008

13,561,000 Therms

1,356,105,424 BTU's
1,356.105 MMBTU
1.356 MMSCF

Assume equal distribution across months (ozone and CO season emissions = 25% of annual)

Fuel Combustion Unit: Garage Heater
Fuel Fired: Natural Gas

Boiler & Fuel Information:

Source Type (utility and controls)		Commercial	Control Efficiency		
Firing Configuration (normal or tang)		Normal	Particulate Matter	(percent)	0%
Average Firing Rate	(MMBtu/hour)		Sulfur Dioxide	(percent)	0%
Maximum Firing Rate	(MMBtu/hour)		Nitrogen Oxides	(percent)	0%
Rated Maximum Firing Rate	(MMBtu/hour)		Maximum Operation	(hr/day)	24
Fuel Type	(grade)	Natural Gas		(day/wk)	7
Average Fuel Heat Content	(Btu/SCF)	1,000	Average Operation	(hr/day)	1.36
Weight % of Sulfur in Oil	(percent)	Negligible		(day/wk)	7
				(wk/yr)	52

Calculated Operational Data:

Average Fuel Usage	(MMSCF/hour)		Average Operating Rate	(hr/yr)	495
Maximum Fuel Usage	(MMSCF/hour)		Maximum Operating Rate	(hr/yr)	495
Average Fuel Usage	(MMSCF/yr)	1.36			
Maximum Fuel Usage	(MMSCF/yr)				

Emission Factors:

Source: AP-42, 5th Edition, Table 1.4-1, -2.

Pollutant	Factor	Units	Rating
Particulate Matter	7.6	lb/MMSCF	D
Sulfur Dioxide	0.6	lb/MMSCF	A
Nitrogen Oxides	100	lb/MMSCF	B
Carbon Monoxide	84	lb/MMSCF	B
Volatile Organic Material	5.5	lb/MMSCF	C

Calculated Emissions:

Pollutant	Annual	
	(Lb/Hr)	(Lb/Yr)
Particulate Matter	0.001	10.41
Sulfur Dioxide	0.000	0.81
Nitrogen Oxides	0.015	135.61
Carbon Monoxide	0.013	113.91
Volatile Organic Material	0.001	7.46

BROOKLYN NY TERMINAL

2008 Monthly Rack Throughput Volumes in Gallons

	REGULAR GASOLINE	SUPER GASOLINE	TOTAL GASOLINE	TOTAL ADDITIVE	TOTAL ETHANOL	TOTAL OC DIESEL
Jan	19,338,061	6,963,432	26,301,493	6,831	2,929,789	2,381
Feb	18,423,812	6,695,462	25,119,274	6,655	2,797,667	2,615
Mar	19,887,479	7,103,519	26,990,998	6,792	3,002,990	2,946
Apr	18,428,196	6,293,015	24,721,211	6,107	2,746,140	2,281
May	14,841,265	4,697,525	19,538,790	4,902	2,170,944	198
Jun	18,557,814	5,735,225	24,293,039	6,165	2,695,607	-
Jul	17,425,867	5,480,160	22,906,027	5,823	2,540,959	-
Aug	15,938,397	5,186,807	21,125,204	5,406	2,345,975	-
Sep	16,068,700	5,252,185	21,320,885	5,270	2,369,902	-
Oct	17,601,260	5,629,900	23,231,160	5,458	2,586,304	-
Nov	15,909,161	5,522,887	21,432,048	4,886	2,388,302	-
Dec	17,241,918	6,101,231	23,343,149	5,318	2,601,183	-
TOTAL	209,661,930	70,661,348	280,323,278	69,613	31,175,762	10,421
YEAR TO DATE TOTALS						
Regular	209,661,930	74.79%				
Super	70,661,348	25.21%				
EtOH	31,175,762					
OC	10,421					
Total Wa	8,050					

The throughput information was sent by Dave via email on April 6, 09.

MOTIVA ENTERPRISES, LLC BROOKLYN TERMINAL

2008 THROUGHPUTS

THROUGHPUT INVENTORY AND TURNOVER CALCULATIONS

	Tank 9 Throughput (gal)	Tank 10 Throughput (gal)	Tank 41 Throughput (gal)	Tank 42 Throughput (gal)	Tank 43 Throughput (gal)	Tank 44 Throughput (gal)	Tank 45 Throughput (gal)	Tank 46 Throughput (gal)	Tank 47 Throughput (gal)	Tank 48 Throughput (gal)	Tank 49 Throughput (gal)	Tank 50 Throughput (gal)	Tank 51 Throughput (gal)	Tank 52 Throughput (gal)	Tank 53 Throughput (gal)	Tank 54 Throughput (gal)	Tank 55 Throughput (gal)
January	2316	2116	712,447.3	1,740,425.5	1,740,425.5	732,447.3	732,447.3	7,928,695.0	7,928,695.0	3,481,716.0	3,481,716.0	0.0	0.0	0.0	0.0	0.0	2,381.0
February	2,256	2,256	699,416.8	1,658,143.1	1,658,143.1	699,416.8	699,416.8	7,553,762.9	7,553,762.9	3,347,731.0	3,347,731.0	0.0	0.0	0.0	0.0	0.0	2,615.0
March	2,102	2,102	780,747.5	1,789,873.1	1,789,873.1	780,747.5	780,747.5	8,153,866.4	8,153,866.4	3,551,759.5	3,551,759.5	0.0	0.0	0.0	0.0	0.0	2,946.0
April	2,070	2,070	686,533.0	1,658,537.6	1,658,537.6	686,533.0	686,533.0	7,555,560.4	7,555,560.4	3,146,507.5	3,146,507.5	0.0	0.0	0.0	0.0	0.0	2,281.0
May	1,862	1,862	542,736.0	1,335,713.9	1,335,713.9	542,736.0	542,736.0	6,094,978.7	6,094,978.7	2,348,762.5	2,348,762.5	0.0	0.0	0.0	0.0	0.0	159.0
June	2,090	2,090	673,901.8	1,670,303.3	1,670,303.3	673,901.8	673,901.8	7,408,793.7	7,408,793.7	2,867,612.5	2,867,612.5	0.0	0.0	0.0	0.0	0.0	0.0
July	1,974	1,974	635,239.8	1,568,328.0	1,568,328.0	635,239.8	635,239.8	7,144,695.5	7,144,695.5	2,740,680.0	2,740,680.0	0.0	0.0	0.0	0.0	0.0	0.0
August	1,833	1,833	586,493.8	1,434,455.7	1,434,455.7	586,493.8	586,493.8	6,534,742.8	6,534,742.8	2,593,403.5	2,593,403.5	0.0	0.0	0.0	0.0	0.0	0.0
September	1,786	1,786	592,475.5	1,446,183.0	1,446,183.0	592,475.5	592,475.5	6,388,167.0	6,388,167.0	2,626,092.5	2,626,092.5	0.0	0.0	0.0	0.0	0.0	0.0
October	1,850	1,850	646,576.0	1,584,113.4	1,584,113.4	646,576.0	646,576.0	7,216,516.6	7,216,516.6	2,814,950.0	2,814,950.0	0.0	0.0	0.0	0.0	0.0	0.0
November	1,656	1,656	597,073.5	1,411,824.5	1,411,824.5	597,073.5	597,073.5	6,327,736.0	6,327,736.0	2,761,443.5	2,761,443.5	0.0	0.0	0.0	0.0	0.0	0.0
December	1,893	1,893	650,295.8	1,551,772.6	1,551,772.6	650,295.8	650,295.8	7,009,186.4	7,009,186.4	3,009,615.5	3,009,615.5	0.0	0.0	0.0	0.0	0.0	0.0
Total	23,598	23,598	7,793,941	18,869,574	18,869,574	7,793,941	7,793,941	85,961,391	85,961,391	35,330,674	35,330,674	0	0	0	8,050	11,720	10,421
Tank Inventory (gal)	8,400	8,400	79,800	79,800	79,800	79,800	79,800	373,800	373,800	420,800	420,800	5,040	5,040	4,200	4,200	4,200	10,466
Turnover	2.8	2.8	97.7	97.7	97.7	97.7	97.7	230.0	230.0	84.1	84.1	0.0	0.0	0.0	1.9	2.8	1.0

1. Throughput inventory provided by Motiva.

CONTENTS CATALOG BY MONTH²

	Tank 9	Tank 10	Tank 41	Tank 42	Tank 43	Tank 44	Tank 45	Tank 46	Tank 47	Tank 48	Tank 49	Tank 50	Tank 51	Tank 52	Tank 53	Tank 54	Tank 55
January	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate
February	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate
March	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate
April	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate
May	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate
June	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate
July	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate
August	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate
September	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate
October	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate
November	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate
December	Additive	Additive	Ethanol	Ethanol	Reg Gas	Reg Gas	Ethanol	Ethanol	Reg Gas	Reg Gas	Prem Gas	Prem Gas	Additive	Additive	Waste Water	Additive	Distillate

2. Contents catalog by month provided by Motiva.

SEASONAL USE CALCULATIONS BY TANK

	Tank 9	Tank 10	Tank 41	Tank 42	Tank 43	Tank 44	Tank 45	Tank 46	Tank 47	Tank 48	Tank 49	Tank 50	Tank 51	Tank 52	Tank 53	Tank 54	Tank 55
Jan - March	29.1%	29.1%	28.0%	28.0%	27.5%	27.5%	28.0%	28.0%	27.5%	27.5%	29.4%	29.4%	0.0%	0.0%	25.0%	25.0%	76.2%
April - June	24.7%	24.7%	24.4%	24.4%	24.7%	24.7%	24.4%	24.4%	24.7%	24.7%	23.7%	23.7%	0.0%	0.0%	24.7%	24.7%	23.8%
July - Sep	23.7%	23.7%	23.3%	23.3%	23.6%	23.6%	23.3%	23.3%	23.6%	23.6%	22.5%	22.5%	0.0%	0.0%	25.0%	25.0%	0.0%
Oct - Dec	22.5%	22.5%	24.3%	24.3%	24.2%	24.2%	24.3%	24.3%	24.2%	24.2%	24.4%	24.4%	0.0%	0.0%	25.0%	25.0%	0.0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	100%	100%	100%

TOTAL THROUGHPUTS

Reg Gas (gal)	209,661,910
Prem Gas (gal)	70,661,348
Distillate (gal)	10,421
Additive (gal)	67,611
Contract Water (gal)	9,915
Ethanol (gal)	11,126,162
Total (gal)	111,387,124

RVP SCHEDULE³

January	15.0
February	15.0
March	15.0
April	13.5
May	8.3
June	8.3
July	8.3
August	8.3
September	10.9
October	13.5
November	15.0
December	15.0

3. RVP schedule provided by Motiva.

OZONE SEASON THROUGHPUTS

Reg Gas (gal)	51,922,078
Prem Gas (gal)	16,462,197
Distillate (gal)	0
Additive (gal)	17,594
Contract Water (gal)	1,011
Ethanol (gal)	7,582,541
Total (gal)	75,966,318

MOTIVA ENTERPRISES, LLC BROOKLYN TERMINAL TANK EMISSIONS - 2008 ANNUAL EMISSIONS

Total VOC Emissions from Tanks

Tank ID	Type	Comments	Total losses (lb/yr)	Concentration (ton/yr)
TK-9	Vertical Fixed Roof	Additive	89.00	0.04
TK-10	Vertical Fixed Roof	Additive	89.00	0.04
TK-41	Internal Floating Roof	Ethanol	278.42	0.14
TK-42	Internal Floating Roof	Ethanol	276.99	0.14
TK-43	Internal Floating Roof	Gasoline	1,440.59	0.72
TK-44	Internal Floating Roof	Gasoline	1,396.44	0.70
TK-45	Internal Floating Roof	Ethanol	276.99	0.14
TK-46	Internal Floating Roof	Ethanol	255.99	0.13
TK-47	Internal Floating Roof	Gasoline	2,223.53	1.11
TK-48	Internal Floating Roof	Gasoline	2,223.53	1.11
TK-49	Internal Floating Roof	Gasoline	2,421.41	1.21
TK-50	Internal Floating Roof	Gasoline	2,421.41	1.21
TK-51	Horizontal Fixed Roof	Additive	-	-
TK-52	Horizontal Fixed Roof	Additive	34.58	0.02
TK-53	Horizontal Fixed Roof	Contact Water	-	-
TK-54	Horizontal Fixed Roof	Additive	44.27	0.02
TK-55	Horizontal Fixed Roof	Diesel	1.44	0.00
Total			13473.59	6.74

Total HAP Emissions from Tanks

Tank ID	Type	Benzene (ton/yr)	Ethylbenzene (ton/yr)	Hexane (ton/yr)	MTBE (ton/yr)	Toluene (ton/yr)	Xylenes (ton/yr)	Naphthalene (ton/yr)	1,2,4-Trimethylbenzene (ton/yr)	Total pollutant (ton/yr)
TK-9 Add	Vertical Fixed Roof	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.00
TK-10 Add	Vertical Fixed Roof	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.00
TK-41 ETOH	Internal Floating Roof	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
TK-42 ETOH	Internal Floating Roof	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
TK-43 G	Internal Floating Roof	0.002	0.000	0.004	0.001	0.003	0.001	0.000	0.000	0.01
TK-44 G	Internal Floating Roof	0.002	0.000	0.004	0.001	0.003	0.001	0.000	0.000	0.01
TK-45 ETOH	Internal Floating Roof	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
TK-46 ETOH	Internal Floating Roof	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
TK-47 G	Internal Floating Roof	0.003	0.000	0.006	0.002	0.005	0.002	0.000	0.000	0.02
TK-48 G	Internal Floating Roof	0.003	0.000	0.006	0.002	0.005	0.002	0.000	0.000	0.02
TK-49 G	Internal Floating Roof	0.004	0.000	0.007	0.002	0.005	0.002	0.000	0.000	0.02
TK-50 G	Internal Floating Roof	0.004	0.000	0.007	0.002	0.005	0.002	0.000	0.000	0.02
TK-51 Add	Horizontal Fixed Roof	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
TK-52 Add	Horizontal Fixed Roof	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
TK-53 Water	Horizontal Fixed Roof	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
TK-54 Add	Horizontal Fixed Roof	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
TK-55 Diesel	Horizontal Fixed Roof	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
Totals (ton/yr)		0.02	0.00	0.04	0.01	0.03	0.01	1.3E-05	0.00	0.11
Total emissions (ton/yr)										0.11

	VOC (lb/yr)	Benzene	Ethylbenzene	Hexane	MTBE	Toluene	Xylenes	Naphthalene	1,2,4-Trimethylbenzene	Total
Fixed Roof Tanks	258.2900	4.09	1.15	0.88	0.00	3.88	2.58	8.7E-04	0.00	12.60
Floating Roof Tanks	13215.3000	40.19	3.48	70.15	22.08	55.42	18.49	0.02	1.38	211.21

MOTIVA ENTERPRISES, LLC BROOKLYN TERMINAL TANK EMISSIONS - 2008 ANNUAL EMISSIONS

Total Standing Loss VOC Emissions from Gasoline Tanks

Tank ID	Type	Contents	Standing (lb/yr)
TK-41	Internal Floating Roof	Ethanol	201.69
TK-42	Internal Floating Roof	Ethanol	201.69
TK-43	Internal Floating Roof	Gasoline	1364.72
TK-44	Internal Floating Roof	Gasoline	1555.03
TK-45	Internal Floating Roof	Ethanol	201.69
TK-46	Internal Floating Roof	Ethanol	201.69
TK-47	Internal Floating Roof	Gasoline	1930.316
TK-48	Internal Floating Roof	Gasoline	1930.316
TK-49	Internal Floating Roof	Gasoline	2291.69
TK-50	Internal Floating Roof	Gasoline	2291.69
Total			11831.93

Total Standing Loss HAP Emissions from Gasoline Tanks

Tank ID	Type	Benzene (lb/yr)	Ethylbenzene (lb/yr)	Hexane (lb/yr)	MTBE (lb/yr)	Toluene (lb/yr)	Xylenes (lb/yr)	Naphthalene (lb/yr)	1,2,4-Trimethylbenzene (lb/yr)	Total pollutant (lb/yr)
TK-41	Internal Floating Roof	0.428	0.022	0.411	0.000	0.342	0.119	0.000	0.000	1.32
TK-42	Internal Floating Roof	0.425	0.022	0.408	0.000	0.340	0.118	0.000	0.000	1.31
TK-43	Internal Floating Roof	4.265	0.378	7.647	2.484	6.031	2.009	0.003	0.156	22.97
TK-44	Internal Floating Roof	3.931	0.348	7.049	2.290	5.559	1.852	0.003	0.143	21.18
TK-45	Internal Floating Roof	0.425	0.022	0.408	0.000	0.340	0.118	0.000	0.000	1.31
TK-46	Internal Floating Roof	0.458	0.023	0.440	0.000	0.366	0.127	0.000	0.000	1.42
TK-47	Internal Floating Roof	5.940	0.527	10.651	3.461	8.400	2.798	0.004	0.217	32.00
TK-48	Internal Floating Roof	5.940	0.527	10.651	3.461	8.400	2.798	0.004	0.217	32.00
TK-49	Internal Floating Roof	7.162	0.635	12.840	4.172	10.127	3.373	0.005	0.261	38.57
TK-50	Internal Floating Roof	7.162	0.635	12.840	4.172	10.127	3.373	0.005	0.261	38.57
Totals (lb/yr)		36.14	3.14	63.34	20.04	50.03	16.69	0.02	1.25	
Total emissions (lb/yr)										190.66

MOTIVA ENTERPRISES, LLC BROOKLYN TERMINAL TANK EMISSIONS - 2008 ANNUAL EMISSIONS

Total Withdrawal Loss VOC Emissions from Gasoline Tanks

Tank ID	Type	Contents	Withdrawal (lb/yr)
TK-41	Internal Floating Roof	Ethanol	35.3
TK-42	Internal Floating Roof	Ethanol	75.3
TK-43	Internal Floating Roof	Gasoline	59.8
TK-44	Internal Floating Roof	Gasoline	138.38
TK-45	Internal Floating Roof	Ethanol	25.1
TK-46	Internal Floating Roof	Ethanol	38.24
TK-47	Internal Floating Roof	Gasoline	322.62
TK-48	Internal Floating Roof	Gasoline	322.62
TK-49	Internal Floating Roof	Gasoline	129.72
TK-50	Internal Floating Roof	Gasoline	129.72
Total			1183.40

Total Withdrawal Loss HAP Emissions from Gasoline Tanks

Tank ID	Type	Benzene (lb/yr)	Ethylbenzene (lb/yr)	Hexane (lb/yr)	MTBE (lb/yr)	Toluene (lb/yr)	Xylenes (lb/yr)	Naphthalene (lb/yr)	2,4-Dimethylbenzene (lb/yr)	Total pollutant (lb/yr)
TK-41	Internal Floating Roof	0.159	0.008	0.152	0.000	0.127	0.044	0.000	0.000	0.49
TK-42	Internal Floating Roof	0.159	0.008	0.152	0.000	0.127	0.044	0.000	0.000	0.49
TK-43	Internal Floating Roof	0.237	0.021	0.425	0.138	0.335	0.112	0.000	0.009	1.28
TK-44	Internal Floating Roof	0.432	0.038	0.775	0.257	0.612	0.204	0.000	0.016	2.33
TK-45	Internal Floating Roof	0.159	0.008	0.152	0.000	0.127	0.044	0.000	0.000	0.49
TK-46	Internal Floating Roof	0.081	0.004	0.078	0.000	0.065	0.023	0.000	0.000	0.25
TK-47	Internal Floating Roof	1.008	0.089	1.808	0.587	1.426	0.475	0.001	0.037	5.43
TK-48	Internal Floating Roof	1.008	0.089	1.808	0.587	1.426	0.475	0.001	0.037	5.43
TK-49	Internal Floating Roof	0.405	0.036	0.727	0.236	0.573	0.191	0.000	0.015	2.18
TK-50	Internal Floating Roof	0.405	0.036	0.727	0.236	0.573	0.191	0.000	0.015	2.18
Totals (lb/yr)		4.05	0.34	6.80	2.04	5.39	1.80	0.002	0.13	20.56
		Total emissions (lb/yr)								20.56

MOTIVA ENTERPRISES, LLC BROOKLYN TERMINAL TANK EMISSIONS - 2008 PEAK OZONE SEASON EMISSIONS

Total VOC Emissions from Tanks

Tank ID	Contents	Total losses (lb/season)
TK-9	Additive	25.59
TK-10	Additive	25.59
TK-41	Ethanol	80.77
TK-42	Ethanol	80.33
TK-43	Gasoline	285.83
TK-44	Gasoline	284.41
TK-45	Ethanol	80.33
TK-46	Ethanol	76.24
TK-47	Gasoline	451.85
TK-48	Gasoline	451.85
TK-49	Gasoline	478.53
TK-50	Gasoline	478.53
TK-51	Additive	-
TK-52	Additive	9.86
TK-53	Contact Water	-
TK-54	Additive	12.72
TK-55	Diesel	0.50
	TOTAL	2822.93

Total HAP Emissions from Tanks

Type	Ethylbenzene (lb/day)	MTBE (lb/day)	Xylenes (lb/day)	1,2,4-Trimethylbenzene (lb/day)
Vertical Fixed Roof	0.001	0.000	0.003	0.000
Vertical Fixed Roof	0.001	0.000	0.003	0.000
Internal Floating Roof	0.000	0.000	0.001	0.000
Internal Floating Roof	0.000	0.000	0.001	0.000
Internal Floating Roof	0.001	0.006	0.005	0.000
Internal Floating Roof	0.001	0.006	0.005	0.000
Internal Floating Roof	0.000	0.000	0.001	0.000
Internal Floating Roof	0.000	0.000	0.000	0.000
Internal Floating Roof	0.001	0.009	0.007	0.001
Internal Floating Roof	0.001	0.009	0.007	0.001
Internal Floating Roof	0.001	0.009	0.008	0.001
Internal Floating Roof	0.001	0.009	0.008	0.001
Horizontal Fixed Roof	0.000	0.000	0.000	0.000
Horizontal Fixed Roof	0.000	0.000	0.001	0.000
Horizontal Fixed Roof	0.000	0.000	0.000	0.000
Horizontal Fixed Roof	0.001	0.000	0.001	0.000
Horizontal Fixed Roof	0.000	0.000	0.000	0.000
Total (lb/day)	0.01	0.05	0.05	0.00
Total tank emissions (lb/day)				

HAP Speciation Profiles Used

All gas considered "Worst Case Gasoline"	
	wt fraction ¹
Benzene	0.003125
ethylbenzene	0.0003
hexane	0.0056
MTBE (RFG)	0.001821
toluene	0.0044
xylene	0.0015
Naphthalene	0.000002
1,2,4-Trimethylbenzene	0.000114

Distillate used for fugitives and VRU for other facilities	
	wt fraction ¹
Benzene	0.002
Ethylbenzene	0.003
Hexane	0.0005
MTBE	0.00
Toluene	0.025
Xylenes	0.012
Naphthalene	0.0006
1,2,4-Trimethylbenzene	0.0032

All additives considered as a "worst-case" additive: Star Jet Kerosene	
	wt fraction ¹
Benzene	0.01593
ethylbenzene	0.00448
hexane	0.00343
MTBE	0.00
toluene	0.01498
xylene	0.00997
Naphthalene	0.00
1,2,4-Trimethylbenzene	0.00

Denatured Ethanol Speciation	
	wt fraction ¹
Benzene	0.00211
Ethylbenzene	0.00011
n-Hexane	0.00202
MTBE	0.00
Toluene	0.00168
Xylene	0.00059
Naphthalene	0.0000003

¹ The revised Shell HAPs speciation for gasoline, additive, distillate and ethanol was provided by Dave Bier of Motiva on 5/23/07. Dave confirmed to use the same speciation as NJ terminals for NY terminals per 4/7/08 email.

**MOTIVA ENTERPRISES, LLC BROOKLYN TERMINAL
LOADING RACK EMISSIONS - 2008 ANNUAL EMISSIONS**

Stream Properties					
Variable	Units	Gas	Distillate	Additive	Ethanol
Saturation Factor, S ¹	-	1.0	1.0	1.0	1.0
Vapor Molecular Weight, MW	lb/mol	67.1	130	120	46.07
True Vapor Pressure, P	psia	6.11	0.0054	0.38	1.86
Liquid Temperature, T	Deg F	53.2	53.2	53.2	53.2
Liquid Temperature, T	Deg R	513.2	513.2	513.2	513.2
Throughput	1000 gal/yr	280,323	10	70	31,176

Vapor Recovery Unit (VRU) Specifications

Variable	Units	Value
Capture Efficiency (MACT)	-	98.7
VRU Rating	mg/liter lb/1000 gal	1.93 0.010

Loading Rack Emission Rate - Gas

Variable	Equation	Results	Units
Loading Loss Factor, L _L	$12.46 * (S * P * MW) / T$	8.63	lb/1000 gal
Loading Loss	$L_L (lb/1000 gal) * Throughput$	1,209	tpy
VRU Input	$Loss (lb/yr) * Capture Efficiency/100$	1,193	tpy
VRU Emissions (Output)	$Throughput * VRU Rating$	2.26	tpy
Rack Fugitive Emissions	$Loss (lb/yr) * (1 - Capture Efficiency/100)$	15.72	tpy
Total Emissions	$VRU Emissions + Rack Fugitives$	17.98	tpy
VRU Control Efficiency	$(Input - Output) / Input$	99.81	%

Loading Rack Emission Rate - Distillate

Variable	Equation	Results	Units
Loading Loss Factor, L _L	$12.46 * (S * P * MW) / T$	0.02	lb/1000 gal
Loading Loss	$L_L (lb/1000 gal) * Throughput$	0.18	lb/yr
VRU Emissions	$Loss * Capture Efficiency/100 * (1 - VRU Control Efficiency/100)$	0.00	lb/yr
Rack Fugitive Emissions	$Loss (lb/yr) * (1 - Capture Efficiency/100)$	0.00	lb/yr
Total	$VRU Emissions + Rack Fugitives$	0.00	lb/yr

Loading Rack Emission Rate - Additive

Variable	Equation	Results	Units
Loading Loss Factor, L _L	$12.46 * (S * P * MW) / T$	1.05	lb/1000 gal
Loading Loss	$L_L (lb/1000 gal) * Throughput$	73.01	lb/yr
VRU Emissions	$Loss * Capture Efficiency/100 * (1 - VRU Control Efficiency/100)$	0.14	lb/yr
Rack Fugitive Emissions	$Loss (lb/yr) * (1 - Capture Efficiency/100)$	0.53	lb/yr
Total	$VRU Emissions + Rack Fugitives$	1.09	lb/yr

Loading Rack Emission Rate - Ethanol

Variable	Equation	Results	Units
Loading Loss Factor, L _L	$12.46 * (S * P * MW) / T$	3.08	lb/1000 gal
Loading Loss	$L_L (lb/1000 gal) * Throughput$	32.43	tpy
VRU Input	$Loss (tpy) * Capture Efficiency/100$	32.01	tpy
VRU Emissions (Output)	$Throughput * VRU Rating$	0.25	tpy
Rack Fugitive Emissions	$Loss (tpy) * (1 - Capture Efficiency/100)$	0.42	tpy
VRU Control Efficiency	$(Input - Output) / Input$	99.22	%
Total Emissions	$VRU Emissions + Rack Fugitives$	0.67	tpy

Total VOC Emissions from Loading Rack				
Fuel	VOC Emissions (ton/yr) VRU Emissions	VOC Emissions (ton/yr) Rack Fugitives	Total (ton/yr)	
Gas	2.26	15.72	17.98	
Distillate	0.00	0.00	0.00	
Additive	0.00	0.00	0.00	
Ethanol	0.25	0.42	0.67	
Total	2.51	16.14	18.65	

Hazardous Air Pollutant Speciation Data

Hazardous Air Pollutant ¹	CAS #	Emission Factor (mg/L) Gas	Vapor Weight %		Vapor Weight %	
			Distillate	Additive	Ethanol	
Benzene	71-43-2	0.001610	3.00	0.14	0.21	
Ethylbenzene	100-41-4	0.002010	0.25	0.44	0.01	
Hexane	110-54-3	0.011000	1.00	0.28	0.20	
Isocetane	540-84-1	0.017700	-	-	-	
MTBE	1634-04-4	0.00374	-	-	0.17	
Toluene	108-88-3	0.003390	1.65	1.37	0.06	
Xylenes	1330-20-7	0.012200	0.87	0.90	0.00	
Naphthalene		0.04	0.11	0.00003		

1. Gasoline emission factor data obtained from Table 5-3 of the Hazardous Air Pollutant Emissions from Gasoline Unloading Operations at Bulk Gasoline Terminals, October 1998.
2. Speciation data derived from information contained in the Compilation of Air Emission Factors for Petroleum Distribution and Retail Marketing Facilities, September 1995.

Loading Rack Fugitives Hazardous Air Pollutant Speciation Data

Hazardous Air Pollutant ¹	CAS #	Emission Factor Vapor wt % Gas	Vapor Weight %		Vapor Weight %	
			Distillate	Additive	Ethanol	
Benzene	71-43-2	0.3125	3.00	0.14	0.21	
Ethylbenzene	100-41-4	0.0277	0.25	0.44	0.01	
Hexane	110-54-3	0.3603	1.00	0.28	0.20	
Isocetane	540-84-1	-	-	-	-	
MTBE	1634-04-4	0.182	-	-	0.17	
Toluene	108-88-3	0.442	1.65	1.37	0.06	
Xylenes	1330-20-7	0.147	0.87	0.90	0.00	
Naphthalene		0.0002	0.04	0.11	0.00	
1,2,4-Trimethylbenzene		0.011	-	-	-	

1. Re-Evaluated Oxygenated gasoline with MTBE speciation data provided by Three River Modes Transportation on 5/16/97 for NJ Terminals.
2. Speciation data derived from information contained in the Compilation of Air Emission Factors for Petroleum Distribution and Retail Marketing Facilities, September 1995.

Hazardous Air Pollutant Emissions by Emission Source - Loading Rack Fugitives

Hazardous Air Pollutant	CAS #	Emissions (lb/yr)		Emissions (lb/yr)		Total (lb/yr)
		Gas	Distillate	Additive	Ethanol	
Benzene	71-43-2	98.24	0.00	0.00	1.78	100.02
Ethylbenzene	100-41-4	8.71	0.00	0.00	0.09	8.80
Hexane	110-54-3	176.14	0.00	0.00	1.71	177.85
Isocetane	540-84-1	-	-	-	-	-
MTBE	1634-04-4	57.23	-	-	1.42	58.65
Toluene	108-88-3	138.92	0.00	0.01	0.49	139.43
Xylenes	1330-20-7	46.28	0.00	0.01	0.00	46.28
Naphthalene		0.06	0.00	0.00	0.00	0.06
1,2,4-Trimethylbenzene		3.58	-	-	-	3.58
Total		529.17	0.00	0.03	5.49	534.69

Hazardous Air Pollutant Emissions by Emission Source - VRU

Hazardous Air Pollutant	CAS #	Emissions (lb/yr)		Emissions (lb/yr)		Total (lb/yr)
		Gas	Distillate	Additive	Ethanol	
Benzene	71-43-2	3.72	0.00	0.00	1.06	4.82
Ethylbenzene	100-41-4	4.70	0.00	0.00	0.06	4.76
Hexane	110-54-3	25.73	0.00	0.00	1.02	26.75
Isocetane	540-84-1	41.40	-	-	-	41.40
MTBE	1634-04-4	8.22	-	-	0.85	9.06
Toluene	108-88-3	12.61	0.00	0.00	0.29	12.90
Xylenes	1330-20-7	28.54	0.00	0.00	0.00	28.54
Naphthalene		0.00	0.00	0.00	0.00	0.00
1,2,4-Trimethylbenzene		-	-	-	-	-
Total		124.96	0.00	0.00	3.27	128.24

MOTIVA ENTERPRISES, LLC BROOKLYN TERMINAL
LOADING RACK EMISSIONS - 2008 PEAK OZONE SEASON EMISSIONS

Stream Properties

Variable	Units	Gas	Distillate	Additive	Ethanol
Saturation Factor, S	-	1.0	1.0	1.0	1.0
Vapor Molecular Weight, MW	lb/lbmol	65	130	120	46.07
True Vapor Pressure, P	psia	651	0.0054	0.34	1.86
Liquid Temperature, T	Deg F	53.2	53.2	53.2	53.2
Liquid Temperature, R	Deg R	513.2	513.2	513.2	513.2
Throughput	1000 gal/yr	68,324	0	17	7,583

Vapor Recovery Unit (VRU) Specifications

Variable	Units	Value
Capture Efficiency (MACT)	-	98.7
VRU Rating	mg/liter	1.93
	lb/1000 gal	0.016

Loading Rack Emission Rate - Gas

Variable	Equation	Results	Units
Loading Loss Factor, L _L	$12.46 * (S * P * MW) / T$	8.63	lb/1000 gal
Loading Loss	$L_L (lb/1000 gal) * Throughput$	589,415	lb/season
VRU Input	$Loss (lb/yr) * Capture Efficiency/100$	587,733	lb/season
VRU Emissions (Output)	$Throughput * VRU Rating$	1,100	lb/season
Rack Fugitive Emissions	$Loss (lb/yr) * (1 - Capture Efficiency/100)$	7,662	lb/season
Total Emissions	$VRU Emissions + Rack Fugitives$	8,763	lb/season
VRU Control Efficiency	$(Input - Output) / Input$	99.81	%

Loading Rack Emission Rate - Distillate

Variable	Equation	Results	Units
Loading Loss Factor, L _L	$12.46 * (S * P * MW) / T$	0.02	lb/1000 gal
Loading Loss	$L_L (lb/1000 gal) * Throughput$	0.00	lb/season
VRU Emissions	$Loss * Capture Efficiency/100 * (1 - VRU Control Efficiency/100)$	0.06	lb/season
Rack Fugitive Emissions	$Loss (lb/yr) * (1 - Capture Efficiency/100)$	0.00	lb/season
Total	$VRU Emissions + Rack Fugitives$	0.00	lb/season

Loading Rack Emission Rate - Additive

Variable	Equation	Results	Units
Loading Loss Factor, L _L	$12.46 * (S * P * MW) / T$	1.05	lb/1000 gal
Loading Loss	$L_L (lb/1000 gal) * Throughput$	18.24	lb/season
VRU Emissions	$Loss * Capture Efficiency/100 * (1 - VRU Control Efficiency/100)$	0.03	lb/season
Rack Fugitive Emissions	$Loss (lb/yr) * (1 - Capture Efficiency/100)$	0.24	lb/season
Total	$VRU Emissions + Rack Fugitives$	0.27	lb/season

Loading Rack Emission Rate - Ethanol

Variable	Equation	Results	Units
Loading Loss Factor, L _L	$12.46 * (S * P * MW) / T$	2.08	lb/1000 gal
Loading Loss	$L_L (lb/1000 gal) * Throughput$	15,775.29	lb/season
VRU Input	$Loss (lb/yr) * Capture Efficiency/100$	15,570.21	lb/season
VRU Emissions (Output)	$Throughput * VRU Rating$	122.11	lb/season
Rack Fugitive Emissions	$Loss (lb/yr) * (1 - Capture Efficiency/100)$	205.08	lb/season
VRU Control Efficiency	$(Input - Output) / Input$	99.22	%
Total Emissions	$VRU Emissions + Rack Fugitives$	327.19	lb/season

Total VOC Emissions from Loading Rack

Fuel	VOC Emissions (ton/season)	VOC Emissions (ton/season)	Total
	VRU Emissions	Rack Fugitives	(ton/season)
Gas	0.55	3.83	4.38
Distillate	-	-	-
Additive	0.00002	0.00012	0.00014
Ethanol	0.06	0.10	0.16
Total	0.61	3.93	4.55

Hazardous Air Pollutant Speciation Data

Hazardous Air Pollutant	CAS #	Emission Factor (mg/L)	Vapor Weight %	Vapor Weight %	Vapor Weight %
		Gas	Distillate	Additive	Ethanol
Benzene	71-43-2	0.001610	3.00	0.14	0.21
Ethylbenzene	100-41-4	0.002010	0.25	0.44	0.01
Hexane	110-54-3	0.011000	1.00	0.28	0.20
Isocane	540-84-1	0.017700	-	-	-
MTBE	1634-04-4	0.00374	-	-	0.17
Toluene	108-88-3	0.003390	1.65	1.37	0.06
Xylenes	1330-20-7	0.012200	0.87	0.90	0.00
Naphthalene			0.04	0.11	0.00003

1. Gasoline emission factor data obtained from Table 5-3 of the Hazardous Air Pollutant Emissions from Gasoline Unloading Operations at Bulk Gasoline Terminals, October 1995.
2. Speciation data derived from information contained in the Compilation of Air Emission Factors for Petroleum Distribution and Retail Marketing Facilities, September 1995.

Loading Rack Fugitives Hazardous Air Pollutant Speciation Data

Hazardous Air Pollutant	CAS #	Emission Factor (Vapor wt %)	Vapor Weight %	Vapor Weight %	Vapor Weight %
		Gas	Distillate	Additive	Ethanol
Benzene	71-43-2	0.3125	3.00	0.14	0.21
Ethylbenzene	100-41-4	0.0277	0.25	0.44	0.01
Hexane	110-54-3	0.5603	1.00	0.28	0.20
Isocane	540-84-1	-	-	-	-
MTBE	1634-04-4	0.182	-	-	0.17
Toluene	108-88-3	0.442	1.65	1.37	0.06
Xylenes	1330-20-7	0.147	0.87	0.90	0.00
Naphthalene		0.0002	0.04	0.11	0.00
1,2,4-Trimethylbenzene		0.011	-	-	-

1. Reformulated/Oxygenated gasoline with MTBE speciation data provided by Dave Bior of Motiva Enterprises on 5/16/07 for NJ Terminals.
2. Speciation data derived from information contained in the Compilation of Air Emission Factors for Petroleum Distribution and Retail Marketing Facilities, September 1995.

Hazardous Air Pollutant Emissions by Emission Source - Loading Rack Fugitives

Hazardous Air Pollutant	CAS #	Emissions (lb/season)	Emissions (lb/season)	Emissions (lb/season)	Emissions (lb/season)	Total
		Gas	Distillate	Additive	Ethanol	(lb/season)
Benzene	71-43-2	23.94	-	0.00033	0.43	24.38
Ethylbenzene	100-41-4	2.12	-	0.00104	0.02	2.15
Hexane	110-54-3	42.93	-	0.00066	0.41	43.35
Isocane	540-84-1	-	-	-	-	-
MTBE	1634-04-4	13.95	-	-	0.35	14.29
Toluene	108-88-3	33.86	-	0.00325	0.12	33.98
Xylenes	1330-20-7	11.28	-	0.00213	0.00	11.28
Naphthalene		0.02	-	0.00026	0.00	0.02
1,2,4-Trimethylbenzene		0.87	-	-	-	0.87
Total		128.98	-	0.00768	1.33	130.32

Hazardous Air Pollutant Emissions by Emission Source - VRU

Hazardous Air Pollutant	CAS #	Emissions (lb/season)	Emissions (lb/season)	Emissions (lb/season)	Emissions (lb/season)	Total
		Gas	Distillate	Additive	Ethanol	(lb/season)
Benzene	71-43-2	0.92	-	0.000048	0.26	1.18
Ethylbenzene	100-41-4	1.15	-	0.000150	0.01	1.16
Hexane	110-54-3	6.27	-	0.000095	0.25	6.52
Isocane	540-84-1	10.09	-	-	-	10.09
MTBE	1634-04-4	2.80	-	-	0.21	2.21
Toluene	108-88-3	3.07	-	0.000467	0.07	3.14
Xylenes	1330-20-7	6.56	-	0.000307	0.00	6.96
Naphthalene		-	-	0.000037	0.00	0.00
1,2,4-Trimethylbenzene		-	-	-	-	-
Total		30.46	-	0.001103	0.79	31.25

MOTIVA ENTERPRISES, LLC BROOKLYN TERMINAL FUGITIVE EMISSIONS - 2008 ANNUAL EMISSIONS

Total Volatile Organic Compound (VOC) Emissions by Component Type

Component Type	Service	Average Emission Factor (lb/hr/source)	Quantity	VOC Emissions (lb/hr)	VOC Emissions (ton/yr)
Valves	Vapor	0.00002866	10	0.00	0.00
	Light Liquid	0.00009480	926	0.09	0.38
Pump Seals	Vapor	0.00014330	-	-	-
	Light Liquid	0.00119000	31	0.04	0.16
Others ²	Vapor	0.00026500	-	-	-
	Light Liquid	0.00028700	90	0.03	0.11
Fittings ³	Vapor	0.00009259	64	0.01	0.03
	Light Liquid	0.00001764	5,542	0.10	0.43
Total				0.25	1.11

¹ These factors are for total organic compound emission rates (including non-VOC's such as methane and ethane). Emission factors extracted from the U.S. EPA Protocol for Equipment Leak Emission Estimates, Publication No. EPA-453/R-95-017, Table 2-3, Marketing Terminal Average Emission Factors.

² The "other" equipment type should be applied for any equipment type other than fittings, pumps, or valves.

³ "Fittings" were not identified as flanges or non-flanged connectors; therefore, the fitting emissions were estimated by averaging the estimates from the connector and the flange correlation equations.

Total Volatile Organic Compound (VOC) Emissions by Service

Service	VOC Emissions (lb/hr)	VOC Emissions (ton/yr)
Vapor	0.01	0.03
Light Liquid	0.25	1.09
Total	0.25	1.11

Hazardous Air Pollutant Speciation Data

HAP	CAS #	Vapor wt% ¹
Benzene	71-43-2	0.3125
Ethylbenzene	100-41-4	0.0277
Hexane	110-54-3	0.5603
Isooctane	540-84-1	-
MTBE	1634-04-4	0.18205
Toluene	108-88-3	0.4419
Xylenes	1330-20-7	0.1472
Naphthalene		0.0002
1,2,4-Trimethylbenzene		0.0114

¹ Reformulated/Oxygenated gasoline with MTBE speciation data provided by Dave Bier of Motiva Enterprises on 5/16/07 for NJ Terminals.

Assumes worst case scenario of year-round transport of gasoline.

Total Hazardous Air Pollutant Emissions from Process Fugitive Emissions

HAP	CAS #	Emissions (lb/yr)
Benzene	71-43-2	6.97
Ethylbenzene	100-41-4	0.62
Hexane	110-54-3	12.49
Isooctane	540-84-1	-
MTBE	1634-04-4	4.06
Toluene	108-88-3	9.85
Xylenes	1330-20-7	3.28
Naphthalene		0.00
1,2,4-Trimethylbenzene		0.25
Total		37.53

MOTIVA ENTERPRISES, LLC BROOKLYN TERMINAL FUGITIVE EMISSIONS - 2008 PEAK OZONE SEASON EMISSIONS

Total Volatile Organic Compound (VOC) Emissions by Component Type

Component Type	Service	Average Emission Factor (lb/hr)/source	Quantity	VOC Emissions (lb/day)	VOC Emissions (lb/season)
Valves	Vapor	0.00002866	10	0.01	0.66
	Light Liquid	0.00009480	926	2.11	193.74
Pump Seals	Vapor	0.00014330	-	-	-
	Light Liquid	0.00119000	31	0.89	81.98
Others ²	Vapor	0.00026500	-	-	-
	Light Liquid	0.00028700	90	0.62	56.84
Fittings ³	Vapor	0.00009259	64	0.14	13.02
	Light Liquid	0.00001764	5,542	2.35	215.82
Total				6.11	562.06

¹ These factors are for total organic compound emission rates (including non-VOCs such as methane and ethane). Emission factors extracted from the U.S. EPA Protocol for Equipment Leak Emission Estimates, Publication No. EPA-453/R-95-017, Table 2-3, Marketing Terminal Average Emission Factors.

² The "other" equipment type should be applied for any equipment type other than fittings, pumps, or valves.

³ "Fittings" were not identified as flanges or non-flanged connectors; therefore, the fitting emissions were estimated by averaging the estimates from the connector and the flange correlation equations.

Total Volatile Organic Compound (VOC) Emissions by Service

Service	VOC Emissions (lb/day)	VOC Emissions (lb/season)
Vapor	0.15	13.68
Light Liquid	5.96	548.38
Total	6.11	562.06

Hazardous Air Pollutant Speciation Data

HAP	CAS #	Vapor wt% ⁴
Benzene	71-43-2	0.3125
Ethylbenzene	100-41-4	0.0277
Hexane	110-54-3	0.5603
Isooctane	540-84-1	-
MTBE	1634-04-4	0.18205
Toluene	108-88-3	0.4419
Xylenes	1330-20-7	0.1472
Naphthalene		0.0002
1,2,4-Trimethylbenzene		0.0114

⁴ Normal gasoline speciation data obtained from the *Compilation of Air Emission Factors for Petroleum Distribution and Retail Marketing Facilities*, September 1995. Assumes worst case scenario of year-round transport of gasoline.

Total Hazardous Air Pollutant Emissions from Process Fugitive Emissions

HAP	CAS #	Emissions (lb/season)
Benzene	71-43-2	1.76
Ethylbenzene	100-41-4	0.16
Hexane	110-54-3	3.15
Isooctane	540-84-1	-
MTBE	1634-04-4	1.02
Toluene	108-88-3	2.48
Xylenes	1330-20-7	0.83
Naphthalene		0.00
1,2,4-Trimethylbenzene		0.06
Total		9.46

APPENDIX B

TANKS 4 OUTPUT

Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK009
City:	Brooklyn
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Vertical Fixed Roof Tank
Description:	

Tank Dimensions

Shell Height (ft):	16.00
Diameter (ft):	11.00
Liquid Height (ft):	14.00
Avg. Liquid Height (ft):	5.50
Volume (gallons):	8,400.00
Turnovers:	2.81
Net Throughput (gal/yr):	23,598.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft):	0.34
Slope (ft/ft) (Cone Roof):	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig):	0.03

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK009 - Vertical Fixed Roof Tank
Brooklyn, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Generic Additive	Jan	44.31	41.43	47.20	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Feb	45.17	41.85	48.49	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Mar	48.85	45.12	52.60	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Apr	53.89	49.28	58.51	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	May	58.34	53.45	63.23	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	Jun	62.55	57.55	67.57	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP70 = .36
Generic Additive	Jul	65.18	60.26	70.09	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Aug	64.49	59.83	69.14	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Sep	61.09	56.69	65.49	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Oct	58.03	52.02	60.04	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	Nov	51.02	47.86	54.17	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	Dec	46.12	43.39	48.85	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK009 - Vertical Fixed Roof Tank **Brooklyn, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	3.8856	4.1462	5.1985	6.2635	6.7870	6.6270	8.6337	6.2802	5.7855	5.4671	4.0701	3.6185
Vapor Space Volume (cu ft):	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138
Vapor Density (lb/cu ft):	0.0080	0.0080	0.0079	0.0078	0.0078	0.0077	0.0077	0.0077	0.0077	0.0078	0.0079	0.0080
Vapor Space Expansion Factor:	0.0187	0.0221	0.0253	0.0318	0.0336	0.0342	0.0333	0.0313	0.0296	0.0269	0.0205	0.0175
Vented Vapor Saturation Factor:	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138	1,008.7138
Tank Diameter (ft):	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000
Vapor Space Outage (ft):	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143
Tank Shell Height (ft):	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000
Average Liquid Height (ft):	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000
Roof Outage (ft):	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143
Roof Outage (Cone Roof)												
Roof Outage (ft):	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143	0.1143
Roof Height (ft):	0.3430	0.3430	0.3430	0.3430	0.3430	0.3430	0.3430	0.3430	0.3430	0.3430	0.3430	0.3430
Roof Slope (ft/ft):	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624	0.0624
Shell Radius (ft):	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000
Vapor Density												
Vapor Density (lb/cu ft):	0.0080	0.0080	0.0079	0.0078	0.0078	0.0077	0.0077	0.0077	0.0077	0.0078	0.0079	0.0080
Vapor Molecular Weight (lb/lb-mole):	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Daily Avg. Liquid Surface Temp. (deg. R):	603.9812	594.8409	598.5307	513.5620	518.0109	522.2313	524.8471	524.1592	520.7602	515.6984	510.6856	505.7950
Daily Average Ambient Temp. (deg. F):	31.3000	32.5000	39.9000	50.3000	59.7000	68.9500	74.9500	74.0000	67.2000	56.7000	46.4000	35.7000
Ideal Gas Constant R												
(psia cu ft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900
Tank Paint Solar Absorptance (Shell):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Daily Total Solar Insulation Factor (Btu/sq ft day):	548.0000	795.0000	1,118.0000	1,457.0000	1,690.0000	1,802.0000	1,784.0000	1,583.0000	1,280.0000	951.0000	593.0000	457.0000
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:	0.0187	0.0221	0.0253	0.0318	0.0336	0.0342	0.0333	0.0313	0.0296	0.0269	0.0205	0.0175
Daily Vapor Temperature Range (deg. R):	11.5385	13.2882	14.8697	18.4553	19.5644	20.0255	19.6518	18.6231	17.8128	16.0468	12.6147	10.8593
Daily Vapor Pressure Range (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Breather Vent Press. Selfing Range (psia):	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Daily Avg. Liquid Surface Temp. (deg. R):	603.9812	594.8409	598.5307	513.5620	518.0109	522.2313	524.8471	524.1592	520.7602	515.6984	510.6856	505.7950
Daily Min. Liquid Surface Temp. (deg. R):	501.0970	501.5188	504.7683	509.9481	513.1198	517.2249	519.9342	519.5034	518.3570	511.6667	507.5319	503.0551
Daily Max. Liquid Surface Temp. (deg. R):	606.6853	598.1629	512.2731	518.1758	522.9020	527.2377	528.7601	528.8149	525.1634	519.7101	513.8393	508.5348
Daily Ambient Temp. Range (deg. R):	12.4000	13.2000	13.4000	16.0000	16.0000	16.9000	15.5000	15.4000	16.0000	16.0000	13.6000	12.2000
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Space Outage (ft):	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143	10.6143
Working Losses (lb):	2.3522	2.3205	2.3678	2.1291	1.7095	2.1497	2.0304	1.8854	1.8370	1.9029	1.7033	1.8545
Vapor Molecular Weight (lb/lb-mole):	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):												

TANKS 4.0 Report

Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Net Throughput (gal/mo):	2,316.0000	2,258.0000	2,302.0000	2,070.0000	1,662.0000	2,090.0000	1,974.0000	1,833.0000	1,786.0000	1,850.0000	1,856.0000	1,803.0000
Annual Turnovers:	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093
Turnover Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Maximum Liquid Volume (gal):	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000
Maximum Liquid Height (ft):	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000
Tank Diameter (ft):	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	6.2878	6.4667	7.5683	8.3926	8.4965	8.7788	8.6641	8.1456	7.6026	7.3700	5.7734	5.4730

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK009 - Vertical Fixed Roof Tank
Brooklyn, NY

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Generic Additive	24.27	64.72	89.00

Shell/Motiva 0008209

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK010
City:	Brooklyn
State:	New York
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Vertical Fixed Roof Tank
Description:	

Tank Dimensions

Shell Height (ft):	16.00
Diameter (ft):	11.00
Liquid Height (ft):	14.00
Avg. Liquid Height (ft):	5.50
Volume (gallons):	8,400.00
Turnovers:	2.81
Net Throughput (gal/yr):	23,598.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft):	0.00
Slope (ft/ft) (Cone Roof):	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig):	0.03

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

BK010 - Vertical Fixed Roof Tank **Brooklyn, New York**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Generic Additive	Jan	44.31	41.43	47.20	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Feb	45.17	41.85	48.49	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Mar	48.88	45.12	52.60	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Apr	53.89	49.28	58.51	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	May	58.34	53.45	63.23	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	Jun	62.56	57.55	67.57	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Jul	65.18	60.26	70.09	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Aug	64.49	59.63	69.14	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Sep	61.09	56.69	65.49	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Oct	56.03	52.02	60.04	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP60 = .36
Generic Additive	Nov	51.02	47.86	54.17	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	Dec	46.12	43.39	48.88	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36

TANKS 4.0.9d

Emissions Report - Detail Format

Detail Calculations (AP-42)

BK010 - Vertical Fixed Roof Tank Brooklyn, New York

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	3.8857	4.1463	5.1986	6.2636	6.7871	6.6272	6.6338	6.2604	5.7656	5.4673	4.0702	3.6186
Vapor Space Volume (cu ft):	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376
Vapor Density (lb/cu ft):	0.0080	0.0080	0.0079	0.0078	0.0078	0.0077	0.0077	0.0077	0.0077	0.0078	0.0079	0.0080
Vapor Space Expansion Factor:	0.0187	0.0221	0.0253	0.0318	0.0336	0.0342	0.0333	0.0313	0.0296	0.0269	0.0205	0.0175
Vented Vapor Saturation Factor:	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376	1,008.7376
Tank Diameter (ft):	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000
Vapor Space Outage (ft):	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146
Tank Shell Height (ft):	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000
Average Liquid Height (ft):	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000
Roof Outage (ft):	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146
Roof Outage (Cone Roof)												
Roof Outage (ft):	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146	0.1146
Roof Height (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Roof Slope (ft/ft):	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625	0.0625
Shell Radius (ft):	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000	5.5000
Vapor Density												
Vapor Density (lb/cu ft):	0.0080	0.0080	0.0079	0.0078	0.0078	0.0077	0.0077	0.0077	0.0077	0.0078	0.0079	0.0080
Vapor Molecular Weight (lb/lb-mole):	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Daily Avg. Liquid Surface Temp. (deg. R):	503.9812	504.8409	505.5307	513.5620	518.0109	522.2313	524.8471	524.1592	520.7602	515.6984	510.6856	505.7950
Daily Average Ambient Temp. (deg. F):	31.3000	32.5000	39.9000	50.3000	59.7000	68.9500	74.9500	74.0000	67.2000	56.7000	46.4000	35.7000
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900
Tank Paint Solar Absorptance (Shell):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Daily Total Solar Insulation Factor (Btu/sq ft day):	548.0000	795.0000	1,118.0000	1,457.0000	1,690.0000	1,832.0000	1,784.0000	1,583.0000	1,280.0000	951.0000	583.0000	457.0000
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:	0.0187	0.0221	0.0253	0.0318	0.0336	0.0342	0.0333	0.0313	0.0296	0.0269	0.0205	0.0175
Daily Vapor Temperature Range (deg. R):	11.5385	13.2882	14.5897	18.4553	19.5644	20.0255	19.6518	18.6231	17.6128	16.0468	12.6147	10.9593
Daily Vapor Pressure Range (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Breather Vent Press. Setting Range (psia):	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Daily Avg. Liquid Surface Temp. (deg R):	503.9812	504.8409	505.5307	513.5620	518.0109	522.2313	524.8471	524.1592	520.7602	515.6984	510.6856	505.7950
Daily Min. Liquid Surface Temp. (deg R):	501.0970	501.5188	504.7883	508.9481	513.1198	517.2249	519.9342	519.5034	516.3570	511.6867	507.5319	503.0551
Daily Max. Liquid Surface Temp. (deg R):	505.8653	508.1629	512.2731	518.1758	522.9020	527.2377	529.8149	525.1634	519.7101	513.6393	508.5348	503.5348
Daily Ambient Temp. Range (deg. R):	12.4000	13.2000	13.4000	16.0000	16.0000	15.9000	15.5000	15.4000	16.0000	16.0000	13.8000	12.2000
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316	0.8316
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Space Outage (ft):	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146	10.6146
Working Losses (lb):	2.3822	2.3205	2.3678	2.1291	1.7095	2.1497	2.0304	1.8854	1.8370	1.9029	1.7033	1.8545
Vapor Molecular Weight (lb/lb-mole):	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):												

TANKS 4.0 Report

Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Net Throughput (gal/mo.):	2,316.0000	2,255.0000	2,302.0000	2,070.0000	1,662.0000	2,090.0000	1,974.0000	1,833.0000	1,796.0000	1,850.0000	1,803.0000
Annual Turnovers:	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093
Turnover Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Maximum Liquid Volume (gal):	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000	8,400.0000
Maximum Liquid Height (ft):	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000
Tank Diameter (ft):	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000	11.0000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	6.2579	6.4667	7.5664	8.3927	8.4966	8.7789	8.6842	8.1457	7.6027	7.3701	5.7735

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK010 - Vertical Fixed Roof Tank
Brooklyn, New York

Components	Losses(lbs)		Total Emissions
	Working Loss	Breathing Loss	
Generic Additive	24.27	64.72	89.00

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	BK041
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	24.00
Volume (gallons):	79,800.00
Turnovers:	97.67
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal:	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1
Roof Leg or Hanger Well/Adjustable	5

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK041 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
denatured ethanol	Jan	44.31	41.43	47.20	53.22	1.1228	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Feb	45.17	41.85	48.49	53.22	1.1457	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Mar	48.86	45.12	52.60	53.22	1.2491	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Apr	53.89	49.28	58.51	53.22	1.4024	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	May	58.34	53.46	63.23	53.22	1.5508	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jun	62.56	57.55	67.57	53.22	1.7033	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jul	65.18	60.26	70.09	53.22	1.8039	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Aug	64.49	59.83	69.14	53.22	1.7770	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Sep	61.09	56.69	65.49	53.22	1.6498	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Oct	56.03	52.02	60.04	53.22	1.4721	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Nov	51.02	47.86	54.17	53.22	1.3129	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Dec	46.12	43.39	48.86	53.22	1.1717	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK041 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	1.0978	1.1213	1.2271	1.3855	1.5404	1.7015	1.8388	1.7800	1.6437	1.4581	1.2929	1.1478
Seal Factor A (lb-mole/ft-yr):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Seal Factor B (lb-mole/ft-yr (mph) ^{1/2}):	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Value of Vapor Pressure Function:	0.0199	0.0203	0.0222	0.0251	0.0279	0.0308	0.0327	0.0322	0.0297	0.0264	0.0234	0.0208
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.1226	1.1457	1.2491	1.4024	1.5508	1.7033	1.8039	1.7770	1.6488	1.4721	1.3129	1.1717
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	7.0770	6.7579	7.2538	8.6334	5.2440	6.5113	6.1378	5.6688	5.7246	6.2473	5.7690	6.2832
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo.):	732,447.3000	699,416.5000	750,747.5000	686,535.0000	542,736.0000	673,901.5000	635,239.8000	586,493.8000	592,475.6000	646,676.0000	597,075.5000	650,295.8000
Shell Clingage Factor (bb/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Deck Fitting Losses (lb):	11.8826	12.1161	13.2582	14.9711	16.8453	18.3880	19.5452	19.2341	17.7816	15.7554	13.9700	12.4030
Value of Vapor Pressure Function:	0.0199	0.0203	0.0222	0.0251	0.0279	0.0308	0.0327	0.0322	0.0297	0.0264	0.0234	0.0208
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact. (lb-mole/yr):	155.6000	155.6000	155.6000	155.6000	155.6000	155.6000	155.6000	155.6000	155.6000	155.6000	155.6000	155.6000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor (ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	20.0374	19.9952	21.7401	22.9900	23.4297	26.5988	27.4918	26.6809	25.1299	23.4608	21.0318	19.8341

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFb (lb-mole/yr (mph) ^{1/2})	m	Losses (lb)
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	58.00	0.00	0.00	65.9913
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	3.3496
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.38	5.1440
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1	10.00	0.00	0.00	11.9827
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	51.4387
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	47.2528

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK041 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	Deck Seam Loss	
denatured ethanol	17.21	75.31	185.91	0.00	278.42

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK042
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):		24.00
Volume (gallons):		79,800.00
Turnovers:		97.67
Self Supp. Roof? (y/n):	N	
No. of Columns:		1.00
Eff. Col. Diam. (ft):		1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal:	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1
Roof Leg or Hanger Well/Adjustable	5

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

BK042 - Internal Floating Roof Tank **BROOKLYN, NY**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
denatured ethanol	Jan	44.31	41.43	47.20	53.22	1.1228	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Feb	45.17	41.85	48.49	53.22	1.1457	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Mar	48.88	45.12	52.60	53.22	1.2491	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Apr	53.89	49.28	58.51	53.22	1.4024	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	May	58.34	53.45	63.23	53.22	1.5508	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jun	62.56	57.55	67.57	53.22	1.7033	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jul	65.18	60.26	70.09	53.22	1.8039	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Aug	64.49	58.83	69.14	53.22	1.7770	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Sep	61.09	56.69	65.49	53.22	1.6488	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Oct	56.03	52.02	60.04	53.22	1.4721	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Nov	51.02	47.88	54.17	53.22	1.3129	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Dec	46.12	43.39	48.86	53.22	1.1717	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK042 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	1.0978	1.1213	1.2271	1.3855	1.5404	1.7015	1.8085	1.7800	1.6437	1.4981	1.2929	1.1478
Seal Factor A (lb-mole/ft-yr):	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
Seal Factor B (lb-mole/ft-yr (mph) ^{1/2}):	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Value of Vapor Pressure Function:	0.0199	0.0203	0.0222	0.0261	0.0279	0.0308	0.0327	0.0322	0.0297	0.0264	0.0234	0.0208
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.1226	1.1457	1.2491	1.4024	1.5508	1.7033	1.8039	1.7770	1.6488	1.4721	1.3129	1.1717
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	7.0770	6.7579	7.2538	8.6334	9.2440	8.5113	8.1378	5.6958	5.7248	6.2473	5.7890	6.2832
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo.):	732,447.3000	699,416.8600	750,747.5000	686,535.0000	542,736.0000	673,901.8000	635,239.8000	556,493.2000	592,475.5000	646,576.0000	597,075.5000	650,295.8000
Shell Clingage Factor (lbbl/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Deck Fitting Losses (lb):	11.7711	12.0227	13.1570	14.8556	16.5189	18.2442	19.3945	19.0858	17.5246	15.6339	13.8622	12.3074
Value of Vapor Pressure Function:	0.0199	0.0203	0.0222	0.0261	0.0279	0.0308	0.0327	0.0322	0.0297	0.0264	0.0234	0.0208
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact. (lb-mole/yr):	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor (ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	19.9459	19.9018	21.6379	22.8745	23.3014	25.4570	27.3410	26.5326	24.9929	23.3392	20.9241	19.7385

Roof Fitting Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFb (lb-mole/yr mph ^{1/2})	m	Losses (lb)
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	58.00	0.00	0.00	66.9913
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	1.9140
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.33	5.1440
Column Well (24-in. Diam.)/Pipe Col-Flex. Fabric Sleeve Seal	1	10.00	0.00	0.00	11.8627
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	51.4397
Roof Leg or Hanger Well/Adjustable	5	7.80	0.00	0.00	47.2528

11/10/09

11/10/09

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK042 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
denatured ethanol	17.21	75.31	184.48	0.00	276.99

Shell/Motiva 0008225

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	BK043
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	43.00
Volume (gallons):	79,800.00
Turnovers:	236.46
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal:	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status

	Quantity
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1
Roof Leg or Hanger Well/Adjustable	5

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK043 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
STAR - RFG 2.0 (15)	Jan	44.31	41.43	47.20	53.22	6.0619	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Feb	45.17	41.85	48.49	53.22	6.1639	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Mar	48.86	45.12	52.60	53.22	6.6173	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
Star - RFG 2.0 (13.5)	Apr	53.89	49.28	58.51	53.22	6.4598	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
Star Gasoline (RVP 8.1)	May	58.34	53.45	63.23	53.22	3.9662	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jun	62.66	57.55	67.57	53.22	4.3143	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.26	70.09	53.22	4.5422	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.49	59.83	69.14	53.22	4.4814	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Sep	61.09	56.69	65.49	53.22	4.1903	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star - RFG 2.0 (13.5)	Oct	56.03	52.02	60.04	53.22	6.7266	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
STAR - RFG 2.0 (15)	Nov	51.02	47.86	54.17	53.22	6.8941	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Dec	46.12	43.39	48.86	53.22	6.2787	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK043 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	17.6143	18.0030	19.7851	19.1559	11.1322	12.2939	13.0746	12.8845	11.8758	20.2285	20.9191	18.4458
Seal Factor A (lb-mole/ft-yr):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Seal Factor B (lb-mole/ft-yr (mph)*n):	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0886	0.0921	0.0907	0.0837	0.1518	0.1589	0.1384
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.0619	6.1839	6.6173	6.4598	3.9682	4.3143	4.5422	4.4614	4.1803	6.7266	6.8941	6.2787
Tank Diameter (ft):	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	6.9979	6.6671	7.1967	6.8687	5.3707	6.7166	6.3059	5.7677	5.8148	6.3694	5.7571	6.2394
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo.):	1,740,425.5000	1,658,143.1000	1,789,873.1000	1,658,537.6000	1,335,713.9000	1,670,203.3000	1,568,328.0000	1,434,455.7000	1,446,183.0000	1,584,113.4000	1,431,624.5000	1,551,772.6000
Shell Clingage Factor (bbl/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170
Tank Diameter (ft):	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000
Deck Fitting Losses (lb):	105.4126	107.7392	118.4039	114.6383	66.6207	73.5727	78.2447	78.9875	71.0705	121.0574	125.1905	110.3886
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0886	0.0921	0.0907	0.0837	0.1518	0.1589	0.1384
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact (lb-mole/yr):	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor (ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000	43.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	130.0248	132.4093	145.3858	140.4629	83.1235	92.6821	97.6253	95.6196	88.7611	147.6553	151.8668	135.0737

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFB (lb-mole/(yr mph*n))	m	Losses (lb)
Ladder Well (36-in. Diam./Sliding Cover, Gasketed)	1	56.00	0.00	0.00	423.8031
Access Hatch (24-in. Diam./Bellied Cover, Gasketed)	1	1.60	0.00	0.00	12.1087
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.35	32.5420
Column Well (24-in. Diam./Pipe Col.-Flex. Fabric Sleeve Seal)	1	10.00	0.00	0.00	75.6791
Sample Pipe or Well (24-in. Diam./Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	326.4202
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	298.9325

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK048 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	50.2485	51.3575	56.4412	54.8482	31.7570	35.0709	37.2980	36.0987	33.8782	57.7081	59.8763	52.6205
Seal Factor A (lb-mole/lb-yr):	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000
Seal Factor B (lb-mole/lb-yr (mph)*n):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0868	0.0921	0.0907	0.0837	0.1618	0.1569	0.1384
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.0619	6.1639	6.6173	6.4598	3.9652	4.3143	4.5422	4.4814	4.1803	6.7268	6.8941	6.2787
Tank Diameter (ft):	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	29.7581	28.3494	30.8016	28.3581	22.8368	28.5556	26.8138	24.5250	24.7255	27.0837	24.4800	26.5307
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo.):	7,928,605.0000	7,553,762.9000	8,153,866.4000	7,555,560.4000	6,084,918.7000	7,608,703.7000	7,144,805.5000	6,534,742.8000	6,588,167.0000	7,216,516.6000	6,522,756.0000	7,069,186.4000
Shell Circage Factor (lb/lb-mole):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170
Tank Diameter (ft):	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000
Deck Fitting Losses (lb):	121.1153	123.7884	136.0418	131.7153	78.5447	84.5323	89.9004	88.4558	81.6575	139.0905	143.8394	126.8325
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0868	0.0921	0.0907	0.0837	0.1618	0.1569	0.1384
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Factor (lb-mole/yr):	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/lb-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor (lb/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000	48.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	201.1200	203.4953	223.0846	214.7176	131.1365	148.1588	154.0122	149.6795	140.2611	223.8804	227.9957	205.9837

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFB (lb-mole/yr mph*n)	m	Losses (lb)
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	258.9325
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Ungask.	1	49.00	0.00	0.00	325.4202
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	0.00	249.7411
Automatic Gauge Float Well/Unhulled Cover, Gasketed	1	4.30	17.00	0.38	32.5420
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	12.1087
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	423.8031

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

BK048 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
STAR - RFG 2.0 (15)	Jan	44.31	41.43	47.20	53.22	6.0619	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Feb	45.17	41.85	48.49	53.22	6.1639	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Mar	48.86	45.12	52.60	53.22	6.6173	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
Star - RFG 2.0 (13.5)	Apr	53.89	49.28	58.51	53.22	6.4596	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
Star Gasoline (RVP 8.1)	May	58.34	53.45	63.23	53.22	3.9662	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jun	62.56	57.55	67.57	53.22	4.3143	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.26	70.09	53.22	4.5422	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.49	59.83	69.14	53.22	4.4914	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Sep	61.09	56.69	65.49	53.22	4.1903	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star - RFG 2.0 (13.5)	Oct	56.03	52.02	60.04	53.22	6.7268	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
STAR - RFG 2.0 (15)	Nov	51.02	47.86	54.17	53.22	6.8941	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Dec	46.12	43.39	48.86	53.22	6.2787	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	BK048
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):		46.00
Volume (gallons):		373,800.00
Turnovers:		229.97
Self Supp. Roof? (y/n):	N	
No. of Columns:		1.00
Eff. Col. Diam. (ft):		1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal:	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Roof Leg or Hanger Well/Adjustable	5
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Ungask.	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK047 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Filling Loss	Deck Seam Loss	
STAR - RFG 2.0 (15)	270.34	139.72	651.62	0.00	1,061.68
Star - RFG 2.0 (13.5)	112.35	55.44	270.81	0.00	438.60
Star Gasoline (RVP 8.1)	174.70	127.46	421.09	0.00	723.25

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK047 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	50.2485	51.3575	56.4412	54.6462	31.7570	35.0709	37.2980	36.6987	33.8782	57.7081	59.6763	52.0205
Seal Factor A (lb-mole/lb-yr):	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000
Seal Factor B (lb-mole/lb-yr (mph) ^{0.75}):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0886	0.0921	0.0907	0.0837	0.1518	0.1569	0.1384
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.0619	6.1639	6.6173	6.4598	3.9662	4.3143	4.5422	4.4814	4.1903	6.7266	6.8941	6.2787
Tank Diameter (ft):	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	29.7581	28.3494	30.6016	28.3581	22.8365	28.5556	26.8138	24.5250	24.7255	27.0837	24.4800	26.5307
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo):	7,928,605.0000	7,553,762.0000	8,153,856.4000	7,555,550.4000	6,084,918.7000	7,608,703.7000	7,144,605.5000	6,534,742.8000	6,582,167.0000	7,216,516.6000	6,522,756.0000	7,069,186.4000
Shell Clingage Factor (bbl/1000 sq ft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170
Tank Diameter (ft):	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000
Deck Filling Losses (lb):	121.1153	123.7884	136.0418	131.7153	76.5447	84.5323	89.9004	88.4558	81.8575	139.0908	143.8394	128.6325
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0886	0.0921	0.0907	0.0837	0.1518	0.1569	0.1384
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Filling Loss Fact.(lb-mole/yr):	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000	177.4000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor(ft/sq ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	201.1200	203.4953	223.0846	214.7176	131.1365	148.1588	154.0122	148.6785	140.2611	223.9804	227.9957	205.9837

Roof Filling/Status	Quantity	KFa(lb-mole/yr)	Roof Filling Loss Factors KFb(lb-mole/(yr mph ^{0.75}))	m	Losses(lb)
Roof Leg or Hanger Well/Adjustable	5	7.50	0.00	0.00	298.9325
Sample Pipe or Well (24-in. Diam./Slotted Pipe-Sliding Cover, Ungask.	1	43.00	0.00	0.00	325.4202
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.38	32.6420
Access Hatch (24-in. Diam./Bolted Cover, Gasketed	1	1.60	0.00	0.00	12.1087
Ladder Well (36-in. Diam./Sliding Cover, Gasketed	1	58.00	0.00	0.00	423.8031
Column Well (24-in. Diam./Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	0.00	249.7411

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK047 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
STAR - RFG 2.0 (15)	Jan	44.31	41.43	47.20	53.22	6.0619	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Feb	45.17	41.85	48.49	53.22	6.1639	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Mar	48.86	45.12	52.60	53.22	6.6173	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
Star - RFG 2.0 (13.5)	Apr	53.89	49.28	58.51	53.22	6.4598	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
Star Gasoline (RVP 8.1)	May	58.34	53.45	63.23	53.22	3.9662	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jun	62.56	57.55	67.57	53.22	4.3143	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.26	70.09	53.22	4.5422	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.49	59.83	69.14	53.22	4.4814	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Sep	61.09	56.69	65.49	53.22	4.1803	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star - RFG 2.0 (13.5)	Oct	66.03	62.02	69.04	53.22	6.7266	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
STAR - RFG 2.0 (15)	Nov	51.02	47.86	54.17	53.22	6.8941	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Dec	46.12	43.39	48.86	53.22	6.2787	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	BK047
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):		46.00
Volume (gallons):		373,800.00
Turnovers:		229.97
Self Supp. Roof? (y/n):	N	
No. of Columns:		1.00
Eff. Col. Diam. (ft):		1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Roof Leg or Hanger Well/Adjustable	5
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Ungask.	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK046 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
denatured ethanol	32.98	38.54	184.48	0.00	255.99

Shell/Motiva 0008238

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK046 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	2.1042	2.1491	2.3519	2.6555	2.9525	3.2613	3.4689	3.4117	3.1505	2.7947	2.4760	2.2000
Seal Factor A (lb-mole/ft-yr):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Seal Factor B (lb-mole/ft-yr (mph) ^{0.75}):	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Value of Vapor Pressure Function:	0.0199	0.0203	0.0222	0.0251	0.0279	0.0308	0.0327	0.0322	0.0297	0.0264	0.0234	0.0208
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.1226	1.1457	1.2491	1.4024	1.5508	1.7033	1.8039	1.7770	1.6488	1.4721	1.3129	1.1717
Tank Diameter (ft):	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	3.6217	3.4584	3.7122	3.3947	2.6837	3.3322	3.1411	2.9000	2.9298	3.1971	2.9523	3.2155
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo.):	732,447.3000	689,416.8000	750,747.5000	686,535.0000	542,736.0000	673,901.8000	635,233.8000	586,493.8000	592,478.5000	646,576.0000	597,075.5000	650,295.8000
Shell Clingage Factor (bbl/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100
Tank Diameter (ft):	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000
Deck Fitting Losses (lb):	11.7711	12.0227	13.1570	14.8556	16.5169	18.2442	19.3945	19.0858	17.6246	15.6339	13.8622	12.3074
Value of Vapor Pressure Function:	0.0199	0.0203	0.0222	0.0251	0.0279	0.0308	0.0327	0.0322	0.0297	0.0264	0.0234	0.0208
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor (ft/ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000	46.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	17.4970	17.6302	19.2211	20.9059	22.1531	24.8377	26.0024	25.3975	23.7047	21.6256	19.2925	17.7229

Roof Fitting/Status	Quantity	KFa(lb-mole/yr)	Roof Fitting Loss Factors KFB(lb-mole/yr mph ^{0.75})	m	Losses(lb)
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	56.9913
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.80	0.00	0.00	1.9140
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.36	5.1440
Column Well (24-in. Diam.)/Pipe Col-Flex Fabric Sleeve Seal	1	10.00	0.00	0.00	11.9627
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	51.4397
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	47.2528

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

BK046 - Internal Floating Roof Tank **BROOKLYN, NY**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
denatured ethanol	Jan	44.31	41.43	47.20	53.22	1.1226	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Feb	45.17	41.85	48.49	53.22	1.1457	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Mar	48.86	45.12	52.60	53.22	1.2491	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Apr	53.89	49.28	58.51	53.22	1.4024	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	May	58.34	53.45	63.23	53.22	1.6508	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jun	62.56	57.55	67.57	53.22	1.7033	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jul	65.18	60.26	70.09	53.22	1.8039	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Aug	64.49	59.83	69.14	53.22	1.7770	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Sep	61.09	56.69	65.49	53.22	1.6488	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Oct	56.03	52.02	60.04	53.22	1.4721	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Nov	51.02	47.86	54.17	53.22	1.3129	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Dec	46.12	43.39	48.88	53.22	1.1717	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	BK046
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	46.00
Volume (gallons):	79,800.00
Turnovers:	97.67
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal:	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1
Roof Leg or Hanger Well/Adjustable	5

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

Shell/Motiva 0008242

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK045 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
denatured ethanol	17.21	75.31	184.48	0.00	276.99

Shell/Motiva 0008243

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK045 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	1.0978	1.1213	1.2271	1.3855	1.5404	1.7015	1.8088	1.7800	1.6437	1.4581	1.2929	1.1478
Seal Factor A (lb-mole/lb-yr):	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000
Seal Factor B (lb-mole/lb-yr (mph) ^{0.75}):	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Value of Vapor Pressure Function:	0.0199	0.0203	0.0222	0.0251	0.0279	0.0308	0.0327	0.0322	0.0297	0.0264	0.0234	0.0208
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.1226	1.1457	1.2491	1.4024	1.5508	1.7033	1.8039	1.7770	1.6488	1.4721	1.3129	1.1717
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	7.0770	6.7579	7.2538	8.6334	5.2440	6.5113	6.1378	5.6888	5.7248	6.2473	5.7690	6.2832
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo):	732,447.3000	689,416.8000	750,747.6000	686,535.0000	542,736.0000	673,901.8000	635,238.8000	588,492.8000	592,475.5000	646,576.0000	597,075.5000	650,295.8000
Shell Coating Factor (lb/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100	6.6100
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Deck Fitting Losses (lb):	11.7711	12.0227	13.1570	14.8556	16.5169	18.2442	19.3945	19.0858	17.6246	16.6339	13.8622	12.3074
Value of Vapor Pressure Function:	0.0199	0.0203	0.0222	0.0251	0.0279	0.0308	0.0327	0.0322	0.0297	0.0264	0.0234	0.0208
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700	46.0700
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	19.9459	19.5018	21.6379	22.8745	23.3014	26.4570	27.3410	26.5328	24.9929	23.3392	20.9241	19.7385

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors		m	Losses(lb)
		KFa(lb-mole/yr)	KFb(lb-mole/yr mph ^{0.75})		
Ladder Well (36-in. Diam./Sliding Cover, Gasketed)	1	56.00	0.00	0.00	68.9913
Access Hatch (24-in. Diam./Bolted Cover, Gasketed)	1	1.60	0.00	0.00	1.9140
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.38	5.1440
Column Well (24-in. Diam./Pipe Col-Flex. Fabric Sleeve Seal)	1	10.00	0.00	0.00	11.9627
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	47.2528
Sample Pipe or Well (24-in. Diam./Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	51.4397

Shell/Motiva 0008245

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

BK045 - Internal Floating Roof Tank **BROOKLYN, NY**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
denatured ethanol	Jan	44.31	41.43	47.20	53.22	1.1226	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Feb	45.17	41.85	48.49	53.22	1.1457	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Mar	48.86	45.12	52.60	53.22	1.2481	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Apr	53.89	49.28	58.51	53.22	1.4024	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	May	58.34	53.45	63.23	53.22	1.5508	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jun	62.66	57.55	67.57	53.22	1.7033	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jul	65.18	60.26	70.09	53.22	1.8039	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Aug	64.49	59.83	69.14	53.22	1.7770	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Sep	61.09	56.69	65.49	53.22	1.6488	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Oct	56.03	52.02	60.04	53.22	1.4721	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Nov	51.02	47.86	54.17	53.22	1.3129	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Dec	46.12	43.39	48.86	53.22	1.1717	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	BK045
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	24.00
Volume (gallons):	79,800.00
Turnovers:	97.67
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal:	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Roof Leg or Hanger Well/Adjustable	5
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK044 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
STAR - RFG 2.0 (15)	41.22	49.43	441.94	0.00	532.59
Star - RFG 2.0 (13.5)	31.92	34.28	342.29	0.00	408.50
Star Gasoline (RVP 8.1)	34.18	54.67	368.50	0.00	455.35

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK044 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	9.9312	10.0482	11.0429	10.8917	8.2133	6.8617	7.2974	7.1802	6.8283	11.2903	9.9419	10.2953
Seal Factor A (lb-mole/ft-yr):	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
Seal Factor B (lb-mole/ft-yr (mph)*n):	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0866	0.0921	0.0907	0.0837	0.1518	0.1336	0.1384
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.0618	6.1839	6.8173	6.4598	3.9662	4.3143	4.5422	4.4814	4.1903	6.7266	6.1141	6.2787
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	12.7835	12.1601	13.1262	12.1630	9.7955	12.2485	11.5014	10.5197	10.6057	11.8172	10.5004	11.3800
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo.):	1,740,426.6000	1,658,143.1000	1,789,873.1000	1,658,537.6000	1,335,713.9000	1,670,203.3000	1,568,328.0000	1,434,455.7000	1,446,183.0000	1,584,113.4000	1,431,824.5000	1,551,772.6000
Shell Clingage Factor (bbl/1000 sq ft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Deck Fitting Losses (lb):	105.4126	107.7392	118.4039	114.6333	66.6207	73.5727	78.2447	78.9875	71.0705	121.0574	106.5988	110.3886
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0866	0.0921	0.0907	0.0837	0.1518	0.1336	0.1384
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact. (lb-mole/yr):	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000	154.4000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor (ft/sq ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000	24.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	128.0074	129.9475	142.5728	137.4930	82.6296	92.6829	97.0436	94.6873	88.3046	143.9649	127.0410	132.0639

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFb (lb-mole/yr mph*ft)	n	Losses (lb)
Ladder Well (36-in. Diam.) Sliding Cover, Gasketed	1	56.00	0.00	0.00	417.1523
Access Hatch (24-in. Diam.) Bolted Cover, Gasketed	1	1.60	0.00	0.00	11.9186
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.38	32.0313
Column Well (24-in. Diam.) Pipe Col-Flex Fabric Sleeve Seal	1	10.00	0.00	0.00	74.4915
Sample Pipe or Well (24-in. Diam.) Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	320.3134
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	294.2414

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK044 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
STAR - RFG 2.0 (15)	Jan	44.31	41.43	47.20	53.22	6.0619	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Feb	45.17	41.85	48.49	53.22	6.1639	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Mar	48.86	45.12	52.60	53.22	6.6173	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
Star - RFG 2.0 (13.5)	Apr	53.89	49.28	58.51	53.22	6.4598	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
Star Gasoline (RVP 8.1)	May	58.34	53.45	63.23	53.22	3.9662	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jun	62.56	57.55	67.57	53.22	4.3143	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.28	70.09	53.22	4.5422	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.49	59.83	69.14	53.22	4.4814	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Sep	61.09	56.69	65.49	53.22	4.1803	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star - RFG 2.0 (13.5)	Oct	56.03	52.02	60.04	53.22	6.7266	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
Star - RFG 2.0 (13.5)	Nov	51.02	47.66	54.17	53.22	6.1141	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
STAR - RFG 2.0 (15)	Dec	46.12	43.39	48.86	53.22	6.2787	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK044
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):		24.00
Volume (gallons):		79,800.00
Turnovers:		236.46
Self Supp. Roof? (y/n):	N	
No. of Columns:		1.00
Eff. Col. Diam. (ft):		1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal:	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1
Roof Leg or Hanger Well/Adjustable	5

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK043 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
STAR - RFG 2.0 (15)	94.77	32.86	567.13	0.00	694.76
Star - RFG 2.0 (13.5)	39.38	13.04	235.70	0.00	288.12
Star Gasoline (RVP 8.1)	61.24	29.97	366.50	0.00	457.71

Shell/Motiva 0008253

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK048 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
STAR - RFG 2.0 (15)	270.34	139.72	651.62	0.00	1,061.68
Star - RFG 2.0 (13.5)	112.35	55.44	270.81	0.00	438.60
Star Gasoline (RVP-8.1)	174.70	127.46	421.09	0.00	723.25

Shell/Motiva 0008255

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	BK049
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	47.00
Volume (gallons):	420,000.00
Turnovers:	84.12
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal:	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status

	Quantity
Roof Leg or Hanger Well/Adjustable	12
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Float	1

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

BK049 - Internal Floating Roof Tank **BROOKLYN, NY**

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
STAR - RFG 2.0 (15)	Jan	44.31	41.43	47.20	53.22	8.0619	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Feb	45.17	41.88	48.49	53.22	8.1639	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Mar	48.86	45.12	52.60	53.22	8.6173	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
Star - RFG 2.0 (13.5)	Apr	53.89	49.28	58.51	53.22	8.4598	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
Star Gasoline (RVP 8.1)	May	58.34	53.45	63.23	53.22	3.9662	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jun	62.56	57.55	67.57	53.22	4.3143	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.26	70.09	53.22	4.5422	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.49	59.83	69.14	53.22	4.4814	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Sep	61.09	56.69	65.49	53.22	4.1903	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star - RFG 2.0 (13.5)	Oct	56.03	52.02	60.04	53.22	6.7266	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
STAR - RFG 2.0 (15)	Nov	51.02	47.86	54.17	53.22	8.8941	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Dec	46.12	43.39	48.86	53.22	8.2787	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK049 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rin Seal Losses (lb):	51.3408	52.4740	57.6682	55.8342	32.4474	35.8333	38.1088	37.4965	34.8147	68.9606	60.9736	53.7844
Seal Factor A (lb-mole/ft ² -yr):	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000
Seal Factor B (lb-mole/ft ² -yr (mph)*n):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0868	0.0921	0.0907	0.0837	0.1518	0.1569	0.1384
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.0619	6.1639	6.6173	6.4598	3.9962	4.3143	4.6422	4.4514	4.1903	6.7266	6.8941	6.2787
Tank Diameter (ft):	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	12.7831	12.2912	13.0403	11.5524	8.6235	10.5284	10.0602	9.5217	9.6417	10.3351	10.1386	11.2003
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo):	3,481,716.0000	3,347,731.0000	3,551,759.5000	3,146,507.5000	2,348,762.5000	2,857,612.5000	2,740,080.0000	2,593,403.5000	2,628,082.5000	2,814,950.0000	2,761,443.5000	3,050,615.5000
Shell Clingage Factor (bbl/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170
Tank Diameter (ft):	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000
Deck Fitting Losses (lb):	155.2515	158.6780	174.3851	168.8391	98.1188	108.3577	115.2387	113.3870	104.6725	178.2931	184.3803	162.5801
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0868	0.0921	0.0907	0.0837	0.1518	0.1569	0.1384
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact. (lb-mole/yr):	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor (ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	219.3755	223.4432	245.0936	236.2257	139.1697	154.7194	163.4077	160.4062	148.9289	247.5888	255.4926	227.5448

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFB (lb-mole/yr mph ² n)	m	Losses (lb)
Roof Leg or Hanger Well/Adjustable	12	7.90	0.00	0.00	717.4380
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1	10.00	0.00	0.00	75.8791
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	105.9508
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	12.1067
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1	76.00	0.00	0.00	575.1813
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Float	1	31.00	36.00	2.00	234.6053

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK049 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Filling Loss	Deck Seam Loss	
STAR - RFG 2.0 (15)	276.22	59.45	835.28	0.00	1,170.95
Star - RFG 2.0 (13.5)	114.79	21.89	347.13	0.00	483.81
Star Gasoline (RVP 8.1)	178.50	48.38	539.77	0.00	766.65

Shell/Motiva 0008260

TANKS 4.0.9d **Emissions Report - Detail Format** **Tank Identification and Physical Characteristics**

Identification

User Identification: BK050
City: BROOKLYN
State: NY
Company: SHELL OIL COMPANY - BROOKLYN
Type of Tank: Internal Floating Roof Tank
Description:

Tank Dimensions

Diameter (ft): 47.00
Volume (gallons): 424,200.00
Turnovers: 83.29
Self Supp. Roof? (y/n): N
No. of Columns: 1.00
Eff. Col. Diam. (ft): 1.00

Paint Characteristics

Internal Shell Condition: Light Rust
Shell Color/Shade: White/White
Shell Condition: Good
Roof Color/Shade: White/White
Roof Condition: Good

Rim-Seal System

Primary Seal: Liquid-mounted
Secondary Seal: None

Deck Characteristics

Deck Fitting Category: Detail
Deck Type: Welded

Deck Fitting/Status**Quantity**

Roof Leg or Hanger Well/Adjustable	12
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Float	1
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

Shell/Motiva 0008261

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

BK050 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
STAR - RFG 2.0 (15)	Jan	44.31	41.43	47.20	53.22	6.0619	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Feb	45.17	41.85	48.49	53.22	6.1639	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Mar	48.86	45.12	52.60	53.22	6.6173	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
Star - RFG 2.0 (13.5)	Apr	53.89	49.28	58.51	53.22	6.4598	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
Star Gasoline (RVP 8.1)	May	58.34	53.45	63.23	53.22	3.9662	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jun	62.56	57.55	67.57	53.22	4.3143	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.25	70.09	53.22	4.5422	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.49	59.83	69.14	53.22	4.4614	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Sep	61.09	56.69	65.49	53.22	4.1903	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star - RFG 2.0 (13.5)	Oct	58.03	52.02	60.04	53.22	6.7266	N/A	N/A	62.0000			62.00	Option 4: RVP=13.5, ASTM Slope=3
STAR - RFG 2.0 (15)	Nov	51.02	47.86	54.17	53.22	6.8941	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3
STAR - RFG 2.0 (15)	Dec	46.12	43.39	48.86	53.22	6.2787	N/A	N/A	62.0000			62.00	Option 4: RVP=15, ASTM Slope=3

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK050 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Film Seal Losses (lb):	51.3409	52.4740	57.6662	55.8342	32.4474	35.8333	38.1088	37.4965	34.6147	58.9606	60.9736	53.7644
Seal Factor A (lb-mole/lb-yr):	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000
Seal Factor B (lb-mole/lb-yr (mph"/n):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0866	0.0921	0.0907	0.0837	0.1518	0.1569	0.1384
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.0619	6.1639	6.6173	6.4698	3.9662	4.3143	4.5422	4.4814	4.1903	6.7266	6.8941	6.2787
Tank Diameter (ft):	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	12.7831	12.2912	13.0403	11.5524	8.6235	10.5284	10.0602	9.5217	9.8417	10.3351	10.1386	11.2003
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo.):	3,481,716.0000	3,347,731.0000	3,551,759.5000	3,146,507.5000	2,348,762.5000	2,867,612.5000	2,740,093.0000	2,693,403.5000	2,828,032.5000	2,814,950.0000	2,761,443.5000	3,050,616.5000
Shell Clingage Factor (bbl/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170	5.0170
Tank Diameter (ft):	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000
Deck Fitting Losses (lb):	155.2515	158.6780	174.3851	168.8391	98.1168	108.3577	115.2387	113.3870	104.8725	178.2831	184.3803	162.5801
Value of Vapor Pressure Function:	0.1321	0.1351	0.1484	0.1437	0.0785	0.0866	0.0921	0.0907	0.0837	0.1518	0.1569	0.1384
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000	227.4000
Deck Seam Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length (ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/lb-yr):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Deck Seam Length Factor (ft/sqft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Tank Diameter (ft):	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000	47.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000	62.0000	62.0000	62.0000	66.0000	66.0000	66.0000	66.0000	66.0000	62.0000	62.0000	62.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	219.3755	223.4432	245.0936	236.2257	139.1897	154.7194	163.4077	180.4052	148.9289	247.5888	255.4926	227.5448

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFb (lb-mole/(yr mph"/n))	m	Losses (lb)
Roof Leg or Hanger Well/Adjustable	12	7.90	0.00	0.00	717.4380
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1	10.00	0.00	0.00	75.6791
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	105.9508
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.50	0.00	0.00	12.1087
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Float	1	31.00	36.00	2.00	234.6053
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1	76.00	0.00	0.00	576.1613

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK050 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
STAR - RFG 2.0 (15)	276.22	59.45	835.28	0.00	1,170.95
Star - RFG 2.0 (13.5)	114.79	21.89	347.13	0.00	483.81
Star Gasoline (RVP 8.1)	178.50	48.38	539.77	0.00	766.65

Shell/Motiva 0008265

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK052
City:	Brooklyn
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):	18.00
Diameter (ft):	6.00
Volume (gallons):	3,780.00
Turnovers:	2.81
Net Throughput(gal/yr):	10,619.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK052 - Horizontal Tank
Brooklyn, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Generic Additive	Jan	44.31	41.43	47.20	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Feb	45.17	41.85	48.49	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Mar	48.86	45.12	52.60	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Apr	53.89	49.28	58.51	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	May	58.34	53.45	63.23	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP60 = .36
Generic Additive	Jun	62.56	57.55	67.57	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Jul	65.18	60.26	70.09	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Aug	64.49	59.83	69.14	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Sep	61.09	56.69	65.49	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Oct	56.03	52.02	60.04	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP60 = .36
Generic Additive	Nov	51.02	47.88	54.17	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP60 = .36
Generic Additive	Dec	46.12	43.39	48.86	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36

Shell/Motiva 0008267

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK052 - Horizontal Tank **Brooklyn, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	1.4203	1.5155	1.9002	2.2895	2.4808	2.4223	2.4248	2.2883	2.1074	1.9994	1.4877	1.3227
Vapor Space Volume (cu ft):	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643
Vapor Density (lb/cu ft):	0.0080	0.0080	0.0079	0.0078	0.0078	0.0077	0.0077	0.0077	0.0077	0.0078	0.0079	0.0080
Vapor Space Expansion Factor:	0.0187	0.0221	0.0253	0.0318	0.0336	0.0342	0.0333	0.0313	0.0286	0.0269	0.0205	0.0175
Vented Vapor Saturation Factor:	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643	324.1643
Tank Diameter (ft):	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
Effective Diameter (ft):	11.7294	11.7294	11.7294	11.7294	11.7294	11.7294	11.7294	11.7294	11.7294	11.7294	11.7294	11.7294
Vapor Space Outage (ft):	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
Tank Shell Length (ft):	18.0000	18.0000	18.0000	18.0000	18.0000	18.0000	18.0000	18.0000	18.0000	18.0000	18.0000	18.0000
Vapor Density												
Vapor Density (lb/cu ft):	0.0080	0.0080	0.0079	0.0078	0.0078	0.0077	0.0077	0.0077	0.0077	0.0078	0.0079	0.0080
Vapor Molecular Weight (lb/lb-mole):	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Daily Avg. Liquid Surface Temp. (deg. R):	503.9812	504.8409	508.5307	513.5820	518.0109	522.2313	524.8471	524.1592	520.7802	515.6884	510.6856	505.7950
Daily Average Ambient Temp. (deg. F):	31.3000	32.5000	39.9000	50.3000	59.7000	68.9500	74.9500	74.0000	67.2000	56.7000	46.4000	35.7000
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900
Tank Paint Solar Absorptance (Shell):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Daily Total Solar Insolation Factor (Btu/sq ft day):	548.0000	795.0000	1,118.0000	1,457.0000	1,690.0000	1,802.0000	1,784.0000	1,583.0000	1,280.0000	951.0000	593.0000	457.0000
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:	0.0187	0.0221	0.0253	0.0318	0.0336	0.0342	0.0333	0.0313	0.0286	0.0269	0.0205	0.0175
Daily Vapor Temperature Range (deg. R):	11.5385	13.2882	14.9597	18.4553	19.5644	20.0255	19.5518	18.6231	17.6128	16.0468	12.6147	10.9593
Daily Vapor Pressure Range (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Breather Vent Press. Setting Range (psia):	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Daily Avg. Liquid Surface Temp. (deg R):	503.9812	504.8409	508.5307	513.5820	518.0109	522.2313	524.8471	524.1592	520.7802	515.6884	510.6856	505.7950
Daily Min. Liquid Surface Temp. (deg R):	501.0970	501.5188	504.7883	508.9481	513.1198	517.2249	519.9342	519.5034	516.3570	511.6867	507.5319	503.0551
Daily Max. Liquid Surface Temp. (deg R):	506.8653	508.1629	512.2731	518.1758	522.9020	527.2377	529.7601	528.8149	525.1834	519.7101	513.5393	509.5348
Daily Ambient Temp. Range (deg. R):	12.4000	13.2000	13.4000	16.0000	16.0000	15.8000	15.5000	16.4000	16.0000	16.0000	13.6000	12.2000
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459	0.9459
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Space Outage (ft):	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
Working Losses (lb):	1.0718	1.0442	1.0657	0.9592	0.7892	0.9673	0.9137	0.8482	0.8289	0.8584	0.7666	0.8344
Vapor Molecular Weight (lb/lb-mole):	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Net Throughput (gal/mo.):	1,042.0000	1,015.2000	1,036.1000	931.6000	747.8000	940.4000	888.3000	824.6000	803.9000	832.6000	745.3000	811.2000
Annual Turnovers:	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093
Turnover Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tank Diameter (ft):	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TANKS 4.0 Report

Total Losses (lb):

2.4921

2.5597

2.0659

3.2477

3.2500

3.3896

3.3385

3.1364

2.9343

2.8548

2.2543

2.1570

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK052 - Horizontal Tank
Brooklyn, NY

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Generic Additive	10.92	23.66	34.58

Shell/Motiva 0008271

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK053
City:	Brooklyn
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):	16.00
Diameter (ft):	8.00
Volume (gallons):	4,200.00
Turnovers:	1.92
Net Throughput(gal/yr):	8,050.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: JFK Intl Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

BK053 - Horizontal Tank
Brooklyn, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Contact Water	Jan	44.31	41.43	47.20	53.22				66.0000			66.00	
Contact Water	Feb	45.17	41.85	48.49	53.22				66.0000			66.00	
Contact Water	Mar	48.86	45.12	52.80	53.22				66.0000			66.00	
Contact Water	Apr	53.89	49.28	58.51	53.22				66.0000			66.00	
Contact Water	May	58.34	53.45	63.23	53.22				66.0000			66.00	
Contact Water	Jun	62.56	57.55	67.57	53.22				66.0000			66.00	
Contact Water	Jul	65.18	60.28	70.09	53.22				66.0000			66.00	
Contact Water	Aug	64.49	59.83	69.14	53.22				66.0000			66.00	
Contact Water	Sep	61.09	56.69	65.49	53.22				66.0000			66.00	
Contact Water	Oct	56.03	52.02	60.04	53.22				66.0000			66.00	
Contact Water	Nov	51.02	47.86	54.17	53.22				66.0000			66.00	
Contact Water	Dec	45.12	43.39	48.86	53.22				66.0000			66.00	

TANKS 4.0.9d

Emissions Report - Detail Format

Detail Calculations (AP-42)

BK053 - Horizontal Tank Brooklyn, NY

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vapor Space Volume (cu ft):	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597
Vapor Density (lb/cu ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vapor Space Expansion Factor:	0.0188	0.0222	0.0254	0.0319	0.0337	0.0343	0.0334	0.0314	0.0297	0.0270	0.0206	0.0176
Vented Vapor Saturation Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597	512.2597
Tank Diameter (ft):	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
Effective Diameter (ft):	12.7694	12.7694	12.7694	12.7694	12.7694	12.7694	12.7694	12.7694	12.7694	12.7694	12.7694	12.7694
Vapor Space Outage (ft):	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
Tank Shell Length (ft):	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000
Vapor Density												
Vapor Density (lb/cu ft):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vapor Molecular Weight (lb/lb-mole):	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Daily Avg. Liquid Surface Temp. (deg. R):	503.9812	504.8409	508.5307	513.5620	518.0109	522.2313	524.8471	524.1592	520.7602	515.6984	510.6856	505.7950
Daily Average Ambient Temp. (deg. F):	31.3000	32.5000	39.9000	50.3000	59.7000	68.9500	74.9500	74.0000	67.2000	56.7000	46.4000	35.7000
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900
Tank Paint Solar Absorptance (Shell):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Daily Total Solar Insulation Factor (Btu/sq ft day):	548.0000	795.0000	1,118.0000	1,457.0000	1,690.0000	1,802.0000	1,784.0000	1,593.0000	1,280.0000	951.0000	593.0000	457.0000
Vapor Space Expansion Factor:												
Vapor Space Expansion Factor:	0.0188	0.0222	0.0254	0.0319	0.0337	0.0343	0.0334	0.0314	0.0297	0.0270	0.0206	0.0176
Daily Vapor Temperature Range (deg. R):	11.5365	13.2882	14.9687	18.4533	19.5644	20.0255	19.6518	18.6231	17.6128	16.0483	12.6147	10.5593
Daily Vapor Pressure Range (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Breather Vent Press. Setting Range (psia):	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Daily Avg. Liquid Surface Temp. (deg R):	503.9812	504.8409	508.5307	513.5620	518.0109	522.2313	524.8471	524.1592	520.7602	515.6984	510.6856	505.7950
Daily Min. Liquid Surface Temp. (deg R):	501.0370	501.5168	504.7883	508.9481	513.1196	517.2249	519.9342	518.5034	516.3570	511.8887	507.5319	503.0561
Daily Max. Liquid Surface Temp. (deg R):	506.8653	508.1629	512.2731	518.1758	522.9020	527.2377	529.7601	528.8149	525.1634	519.7101	513.8393	508.5348
Daily Ambient Temp. Range (deg. R):	12.4000	13.2000	13.4000	16.0000	16.0000	15.8000	15.5000	15.4000	16.0000	16.0000	13.9000	12.2000
Vented Vapor Saturation Factor:												
Vented Vapor Saturation Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vapor Space Outage (ft):	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
Working Losses (lb):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vapor Molecular Weight (lb/lb-mole):	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Net Throughput (gal/mo.):	670.8333	670.8333	670.8333	670.8333	670.8333	670.8333	670.8333	670.8333	670.8333	670.8333	670.8333	670.8333
Annual Turnovers:	1.9167	1.9167	1.9167	1.9167	1.9167	1.9167	1.9167	1.9167	1.9167	1.9167	1.9167	1.9167
Turnover Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tank Diameter (ft):	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Total Losses (lb):

...C/Progral.

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK053 - Horizontal Tank
Brooklyn, NY

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Contact Water	0.00	0.00	0.00

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK054
City:	Brooklyn
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):	14.00
Diameter (ft):	8.00
Volume (gallons):	4,200.00
Turnovers:	2.81
Net Throughput(gal/yr):	11,799.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig):	0.03

Meteorological Data used in Emissions Calculations: JFK Intl Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

BK054 - Horizontal Tank
Brooklyn, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Generic Additive	Jan	44.31	41.43	47.20	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Feb	45.17	41.85	48.49	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Mar	48.86	45.12	52.60	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36
Generic Additive	Apr	53.89	49.28	58.51	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	May	58.34	53.45	63.23	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	Jun	62.56	57.55	67.57	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Jul	65.18	60.26	70.09	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Aug	64.49	59.83	69.14	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Sep	61.09	56.69	65.49	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Oct	56.03	52.02	60.04	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	Nov	51.02	47.86	54.17	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP50 = .36 VP60 = .36
Generic Additive	Dec	46.12	43.39	48.86	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP40 = .36 VP50 = .36

Shell/Motiva 0008279

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK054 - Horizontal Tank **Brooklyn, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	1.9290	2.0584	2.5808	3.1095	3.3694	3.2900	3.2933	3.1079	2.8623	2.7142	2.0206	1.7964
Vapor Space Volume (cu ft):	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272
Vapor Density (lb/cu ft):	0.0080	0.0080	0.0079	0.0078	0.0078	0.0077	0.0077	0.0077	0.0077	0.0078	0.0079	0.0080
Vapor Space Expansion Factor:	0.0187	0.0221	0.0253	0.0318	0.0336	0.0342	0.0333	0.0313	0.0286	0.0269	0.0205	0.0175
Vented Vapor Saturation Factor:	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272	448.2272
Tank Diameter (ft):	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
Effective Diameter (ft):	11.9447	11.9447	11.9447	11.9447	11.9447	11.9447	11.9447	11.9447	11.9447	11.9447	11.9447	11.9447
Vapor Space Outage (ft):	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
Tank Shell Length (ft):	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000
Vapor Density												
Vapor Density (lb/cu ft):	0.0080	0.0080	0.0079	0.0078	0.0078	0.0077	0.0077	0.0077	0.0077	0.0078	0.0079	0.0080
Vapor Molecular Weight (lb/lb-mole):	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Daily Avg. Liquid Surface Temp. (deg. R):	503.9812	504.8409	508.5307	513.5620	518.0109	522.2313	524.8471	524.1592	520.7602	515.6984	510.6856	505.7950
Daily Average Ambient Temp. (deg. F):	31.2000	32.5000	39.9000	50.3000	59.7000	68.9500	74.9500	74.0000	67.2000	56.7000	46.4000	35.7000
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900
Tank Paint Solar Absorptance (Shell):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Daily Total Solar Insulation Factor (Btu/sq ft day):	548.0000	795.0000	1,118.0000	1,457.0000	1,890.0000	1,802.0000	1,784.0000	1,563.0000	1,280.0000	951.0000	593.0000	457.0000
Vapor Space Expansion Factor:												
Vapor Space Expansion Factor:	0.0187	0.0221	0.0253	0.0318	0.0336	0.0342	0.0333	0.0313	0.0286	0.0269	0.0205	0.0175
Daily Vapor Temperature Range (deg. R):	11.5385	13.2882	14.9697	18.4553	19.6844	20.0255	19.6518	18.6231	17.6128	16.4668	12.6147	10.9593
Daily Vapor Pressure Range (psia):	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Breather Vent Press. Setting Range (psia):	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Daily Avg. Liquid Surface Temp. (deg R):	503.9812	504.8409	508.5307	513.5620	518.0109	522.2313	524.8471	524.1592	520.7602	515.6984	510.6856	505.7950
Daily Min. Liquid Surface Temp. (deg R):	501.0970	501.5188	504.7883	508.9481	513.1198	517.2249	519.9342	516.3570	511.6867	507.5319	503.0551	503.0551
Daily Max. Liquid Surface Temp. (deg R):	506.8653	508.1629	512.2731	518.1758	522.9020	527.2377	529.7601	528.8149	525.1834	519.7101	513.8393	508.5348
Daily Ambient Temp. Range (deg. R):	12.4000	13.2000	13.4000	16.0000	18.0000	15.9000	15.5000	15.4000	16.0000	16.0000	13.6000	12.2000
Vented Vapor Saturation Factor:												
Vented Vapor Saturation Factor:	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291	0.9291
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Vapor Space Outage (ft):	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
Working Losses (lb):	1.1909	1.1602	1.1841	1.0847	0.8545	1.0748	1.0151	0.9425	0.9187	0.9515	0.6518	0.9272
Vapor Molecular Weight (lb/lb-mole):	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000	120.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600	0.3600
Net Throughput (galmo.):	1,157.8000	1,128.0000	1,151.2000	1,035.1000	830.8000	1,044.9000	988.9000	916.3000	893.2000	925.1000	828.1000	931.4000
Annual Turnovers:	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093	2.8093
Turnover Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tank Diameter (ft):	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Total Losses (lb):

3.1199

3.2188

3.7649

4.1742

4.2240

4.3848

4.3084

4.0504

3.7811

3.6657

2.8724

2.7236

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TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK054 - Horizontal Tank
Brooklyn, NY

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Generic Additive	12.14	32.13	44.27

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK055
City:	Brooklyn
State:	New York
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):	27.83
Diameter (ft):	8.00
Volume (gallons):	10,466.00
Turnovers:	1.00
Net Throughput(gal/yr):	10,421.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

BK055 - Horizontal Tank
Brooklyn, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	Jan	44.31	41.43	47.20	53.22	0.0037	0.0033	0.0041	130.0000			188.00	Option 1: VP40 = .0031 VP50 = .0045
Distillate fuel oil no. 2	Feb	45.17	41.85	48.49	53.22	0.0038	0.0034	0.0043	130.0000			188.00	Option 1: VP40 = .0031 VP50 = .0045
Distillate fuel oil no. 2	Mar	48.86	45.12	52.80	53.22	0.0043	0.0038	0.0053	130.0000			188.00	Option 1: VP40 = .0031 VP50 = .0045
Distillate fuel oil no. 2	Apr	53.89	49.28	58.51	53.22	0.0056	0.0044	0.0070	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0074
Distillate fuel oil no. 2	May	58.34	53.45	63.23	53.22	0.0069	0.0055	0.0079	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0074
Distillate fuel oil no. 2	Jun	62.56	57.55	67.57	53.22	0.0078	0.0067	0.0086	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Jul	65.18	60.26	70.09	53.22	0.0082	0.0074	0.0090	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Aug	64.49	59.83	69.14	53.22	0.0081	0.0074	0.0089	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Sep	61.09	56.89	65.49	53.22	0.0076	0.0064	0.0083	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Oct	56.03	52.02	60.04	53.22	0.0062	0.0051	0.0074	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0074
Distillate fuel oil no. 2	Nov	51.02	47.86	54.17	53.22	0.0048	0.0042	0.0057	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0074
Distillate fuel oil no. 2	Dec	46.12	43.39	48.86	53.22	0.0040	0.0036	0.0043	130.0000			188.00	Option 1: VP40 = .0031 VP50 = .0045

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK055 - Horizontal Tank **Brooklyn, New York**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):	0.0463	0.0510	0.0726	0.1135	0.1511	0.1663	0.1753	0.1632	0.1404	0.1101	0.0829	0.0451
Vapor Space Volume (cu ft):	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117
Vapor Density (lb/cu ft):	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001
Vapor Space Expansion Factor:	0.0189	0.0223	0.0255	0.0320	0.0338	0.0344	0.0335	0.0315	0.0289	0.0272	0.0207	0.0178
Vented Vapor Saturation Factor:	0.9992	0.9992	0.9991	0.9998	0.9995	0.9993	0.9993	0.9983	0.9984	0.9987	0.9990	0.9992
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117	891.0117
Tank Diameter (ft):	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
Effective Diameter (ft):	16.8410	16.8410	16.8410	16.8410	16.8410	16.8410	16.8410	16.8410	16.8410	16.8410	16.8410	16.8410
Vapor Space Outage (ft):	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
Tank Shell Length (ft):	27.8300	27.8300	27.8300	27.8300	27.8300	27.8300	27.8300	27.8300	27.8300	27.8300	27.8300	27.8300
Vapor Density												
Vapor Density (lb/cu ft):	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0037	0.0038	0.0043	0.0058	0.0069	0.0078	0.0082	0.0081	0.0076	0.0062	0.0048	0.0040
Daily Avg. Liquid Surface Temp. (deg. R):	503.9812	504.8409	508.5307	513.5620	518.0109	522.2313	524.8471	524.1582	520.7802	515.6934	510.6856	505.7950
Daily Average Ambient Temp. (deg. F):	31.3000	32.5000	39.9000	50.3000	59.7000	68.9500	74.8500	74.0000	67.2000	56.7000	46.4000	35.7000
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731	10.731
Liquid Bulk Temperature (deg. R):	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900	512.8900
Tank Paint Solar Absorptance (Shell):	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700	0.1700
Daily Total Solar Insulation Factor (Btu/sq ft day):	548.0000	795.0000	1,118.0000	1,457.0000	1,690.0000	1,802.0000	1,784.0000	1,583.0000	1,280.0000	951.0000	593.0000	457.0000
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:	0.0189	0.0223	0.0255	0.0320	0.0338	0.0344	0.0335	0.0315	0.0289	0.0272	0.0207	0.0178
Daily Vapor Temperature Range (deg. R):	11.5365	13.2882	14.9697	18.4553	19.5644	20.0255	19.6518	18.6231	17.6128	16.0468	12.6147	10.9593
Daily Vapor Pressure Range (psia):	0.0008	0.0009	0.0014	0.0026	0.0024	0.0019	0.0016	0.0015	0.0018	0.0023	0.0015	0.0008
Breather Vent Press. Setting Range (psia):	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0037	0.0038	0.0043	0.0058	0.0069	0.0078	0.0082	0.0081	0.0076	0.0062	0.0048	0.0040
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0033	0.0034	0.0038	0.0044	0.0055	0.0067	0.0074	0.0074	0.0064	0.0051	0.0042	0.0036
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0041	0.0043	0.0053	0.0070	0.0079	0.0086	0.0090	0.0089	0.0083	0.0074	0.0057	0.0043
Daily Avg. Liquid Surface Temp. (deg R):	503.9812	504.8409	508.5307	513.5620	518.0109	522.2313	524.8471	524.1582	520.7802	515.6934	510.6856	505.7950
Daily Min. Liquid Surface Temp. (deg R):	501.0970	501.5188	504.7883	508.9481	513.1199	517.2249	519.9342	519.9342	516.3570	511.6867	507.5319	503.0551
Daily Max. Liquid Surface Temp. (deg R):	506.8653	508.1629	512.2731	518.1758	522.9020	527.2377	529.7601	528.8149	525.1634	519.7101	513.8393	508.5348
Daily Ambient Temp. Range (deg. R):	12.4000	13.2000	13.4000	16.0000	16.0000	15.9000	15.5000	15.4000	16.0000	16.0000	13.8000	12.2000
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:	0.9992	0.9992	0.9991	0.9998	0.9995	0.9993	0.9993	0.9983	0.9984	0.9987	0.9990	0.9992
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0037	0.0038	0.0043	0.0058	0.0069	0.0078	0.0082	0.0081	0.0076	0.0062	0.0048	0.0040
Vapor Space Outage (ft):	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
Working Losses (lb):	0.0273	0.0310	0.0396	0.0397	0.0042	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0037	0.0038	0.0043	0.0058	0.0069	0.0078	0.0082	0.0081	0.0076	0.0062	0.0048	0.0040
Net Throughput (gal/mo.):	2,361.0000	2,615.0000	2,946.0000	2,281.0000	198.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Annual Turnovers:	0.9957	0.9957	0.9957	0.9957	0.9957	0.9957	0.9957	0.9957	0.9957	0.9957	0.9957	0.9957
Turnover Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tank Diameter (ft):	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000	8.0000
Working Loss Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TANKS 4.0 Report

Total Losses (lb):

0.0736

0.0820

0.1122

0.1533

0.1563

0.1663

0.1753

0.1632

0.1404

0.1101

0.0629

0.0461

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

BK055 - Horizontal Tank
Brooklyn, New York

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.14	1.30	1.44

Shell/Motiva 0008289

TANKS 4.0.9d
Emissions Report - Detail Format
Total Emissions Summaries - All Tanks in Report

Emissions Report for: January, February, March, April, May, June, July, August, September, October, November, December

Tank Identification				Losses (lbs)
BK009	SHELL OIL COMPANY - BROOKLYN	Vertical Fixed Roof Tank	Brooklyn, NY	89.00
BK010	SHELL OIL COMPANY - BROOKLYN	Vertical Fixed Roof Tank	Brooklyn, New York	89.00
BK041	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	278.42
BK042	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	276.99
BK043	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	1,440.59
BK044	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	1,396.44
BK045	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	276.99
BK046	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	255.99
BK047	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	2,223.53
BK048	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	2,223.53
BK049	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	2,421.41
BK050	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	2,421.41
BK052	SHELL OIL COMPANY - BROOKLYN	Horizontal Tank	Brooklyn, NY	34.58
BK053	SHELL OIL COMPANY - BROOKLYN	Horizontal Tank	Brooklyn, NY	0.00
BK054	SHELL OIL COMPANY - BROOKLYN	Horizontal Tank	Brooklyn, NY	44.27
BK055	SHELL OIL COMPANY - BROOKLYN	Horizontal Tank	Brooklyn, New York	1.44
Total Emissions for all Tanks:				13,473.58

Shell/Motiva 0008291

TANKS 4.09d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK009
City:	Brooklyn
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Vertical Fixed Roof Tank
Description:	

Tank Dimensions

Shell Height (ft):	16.00
Diameter (ft):	11.00
Liquid Height (ft):	14.00
Avg. Liquid Height (ft):	5.50
Volume (gallons):	8,400.00
Turnovers:	2.81
Net Throughput(gal/yr):	23,598.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.34
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK009 - Vertical Fixed Roof Tank
Brooklyn, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Generic Additive	Jun	62.58	57.55	67.57	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Jul	65.18	60.26	70.09	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Aug	64.49	59.83	69.14	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36

TANKS 4.0.9d

Emissions Report - Detail Format

Detail Calculations (AP-42)

BK009 - Vertical Fixed Roof Tank Brooklyn, NY

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):						6.6270	6.6337	6.2802				
Vapor Space Volume (cu ft):						1,008.7138	1,008.7138	1,008.7138				
Vapor Density (lb/cu ft):						0.0077	0.0077	0.0077				
Vapor Space Expansion Factor:						0.0342	0.0333	0.0313				
Vented Vapor Saturation Factor:						0.8316	0.8316	0.8316				
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):						1,008.7138	1,008.7138	1,008.7138				
Tank Diameter (ft):						11.0000	11.0000	11.0000				
Vapor Space Outage (ft):						10.6143	10.6143	10.6143				
Tank Shell Height (ft):						16.0000	16.0000	16.0000				
Average Liquid Height (ft):						5.5000	5.5000	5.5000				
Roof Outage (ft):						0.1143	0.1143	0.1143				
Roof Outage (Cone Roof)												
Roof Outage (ft):						0.1143	0.1143	0.1143				
Roof Height (ft):						0.3430	0.3430	0.3430				
Roof Slope (ft/ft):						0.0624	0.0624	0.0624				
Shell Radius (ft):						5.5000	5.5000	5.5000				
Vapor Density												
Vapor Density (lb/cu ft):						0.0077	0.0077	0.0077				
Vapor Molecular Weight (lb/lb-mole):						120.0000	120.0000	120.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Daily Avg. Liquid Surface Temp. (deg. R):						522.2313	524.8471	524.1592				
Daily Average Ambient Temp. (deg. F):						68.9500	74.9500	74.0000				
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):						10.731	10.731	10.731				
Liquid Bulk Temperature (deg. R):						512.8900	512.8900	512.8900				
Tank Paint Solar Absorptance (Shell):						0.1700	0.1700	0.1700				
Tank Paint Solar Absorptance (Roof):						0.1700	0.1700	0.1700				
Daily Total Solar Insolation Factor (Btu/sq ft day):						1,802.0000	1,784.0000	1,583.0000				
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:						0.0342	0.0333	0.0313				
Daily Vapor Temperature Range (deg. R):						20.0255	19.6518	18.8231				
Daily Vapor Pressure Range (psia):						0.0000	0.0000	0.0000				
Breather Vent Press. Setting Range (psia):						0.0600	0.0600	0.0600				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Daily Avg. Liquid Surface Temp. (deg R):						522.2313	524.8471	524.1592				
Daily Min. Liquid Surface Temp. (deg R):						517.2249	519.9342	519.5034				
Daily Max. Liquid Surface Temp. (deg R):						527.2377	529.7601	528.8149				
Daily Ambient Temp. Range (deg. R):						15.9000	15.5000	15.4000				
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:						0.8316	0.8316	0.8316				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Space Outage (ft):						10.6143	10.6143	10.6143				
Working Losses (lb):						2.1497	2.0304	1.8854				
Vapor Molecular Weight (lb/lb-mole):						120.0000	120.0000	120.0000				
Vapor Pressure at Daily Average Liquid												

TANKS 4.0 Report

Surface Temperature (psia):
 Net Throughput (gal/mo):
 Annual Turnovers:
 Turnover Factor:
 Maximum Liquid Volume (gal):
 Maximum Liquid Height (ft):
 Tank Diameter (ft):
 Working Loss Product Factor:

0.3600	0.3600	0.3600
2,093.0000	1,974.0000	1,833.0000
2.8093	2.8093	2.8093
1.0000	1.0000	1.0000
8,400.0000	8,400.0000	8,400.0000
14.0000	14.0000	14.0000
11.0000	11.0000	11.0000
1.0000	1.0000	1.0000

Total Losses (lb):

8.7768	8.6641	8.1458
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10/10/09

10/10/09

10/10/09

10/10/09

10/10/09

Summary of TANKS 4.0 Report

10/10/09

10/10/09

10/10/09

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK009 - Vertical Fixed Roof Tank
Brooklyn, NY

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Generic Additive	6.07	19.52	25.59

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK010
City:	Brooklyn
State:	New York
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Vertical Fixed Roof Tank
Description:	

Tank Dimensions

Shell Height (ft):	16.00
Diameter (ft):	11.00
Liquid Height (ft):	14.00
Avg. Liquid Height (ft):	5.50
Volume (gallons):	8,400.00
Turnovers:	2.81
Net Throughput(gal/yr):	23,598.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK010 - Vertical Fixed Roof Tank
Brooklyn, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Generic Additive	Jun	62.56	57.55	67.57	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Jul	65.18	60.26	70.09	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Aug	64.49	59.83	69.14	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36

TANKS 4.0.9d

Emissions Report - Detail Format

Detail Calculations (AP-42)

BK010 - Vertical Fixed Roof Tank Brooklyn, New York

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):						6.6272	6.6338	6.2604				
Vapor Space Volume (cu ft):						1,008.7376	1,008.7376	1,008.7376				
Vapor Density (lb/cu ft):						0.0077	0.0077	0.0077				
Vapor Space Expansion Factor:						0.0342	0.0333	0.0313				
Vented Vapor Saturation Factor:						0.8316	0.8316	0.8316				
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):						1,008.7376	1,008.7376	1,008.7376				
Tank Diameter (ft):						11.0000	11.0000	11.0000				
Vapor Space Outage (ft):						10.6146	10.6146	10.6146				
Tank Shell Height (ft):						16.0000	16.0000	16.0000				
Average Liquid Height (ft):						5.5000	5.5000	5.5000				
Roof Outage (ft):						0.1146	0.1146	0.1146				
Roof Outage (Cone Roof):												
Roof Outage (ft):						0.1146	0.1146	0.1146				
Roof Height (ft):						0.0000	0.0000	0.0000				
Roof Slope (ft/ft):						0.0625	0.0625	0.0625				
Shell Radius (ft):						5.5000	5.5000	5.5000				
Vapor Density												
Vapor Density (lb/cu ft):						0.0077	0.0077	0.0077				
Vapor Molecular Weight (lb/lb-mole):						120.0000	120.0000	120.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Daily Avg. Liquid Surface Temp. (deg. R):						522.2313	524.8471	524.1592				
Daily Average Ambient Temp. (deg. F):						68.9500	74.9500	74.0000				
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):						10.731	10.731	10.731				
Liquid Bulk Temperature (deg. R):						512.8900	512.8900	512.8900				
Tank Paint Solar Absorptance (Shell):						0.1700	0.1700	0.1700				
Tank Paint Solar Absorptance (Roof):						0.1700	0.1700	0.1700				
Daily Total Solar Insolation Factor (Btu/sq ft day):						1,802.0000	1,784.0000	1,583.0000				
Vapor Space Expansion Factor:												
Vapor Space Expansion Factor:						0.0342	0.0333	0.0313				
Daily Vapor Temperature Range (deg. R):						20.0255	19.6518	18.6231				
Daily Vapor Pressure Range (psia):						0.0000	0.0000	0.0000				
Breather Vent Press. Setting Range (psia):						0.0600	0.0600	0.0600				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Daily Avg. Liquid Surface Temp. (deg R):						522.2313	524.8471	524.1592				
Daily Min. Liquid Surface Temp. (deg R):						517.2249	519.9342	519.5034				
Daily Max. Liquid Surface Temp. (deg R):						527.2377	529.7801	528.8149				
Daily Ambient Temp. Range (deg. R):						15.9000	15.5000	15.4000				
Vented Vapor Saturation Factor:												
Vented Vapor Saturation Factor:						0.8316	0.8316	0.8316				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Space Outage (ft):						10.6146	10.6146	10.6146				
Working Losses (lb):												
Vapor Molecular Weight (lb/lb-mole):						2.1497	2.0304	1.8854				
Vapor Pressure at Daily Average Liquid						120.0000	120.0000	120.0000				

TANKS 4.0 Report

Surface Temperature (psia):
 Net Throughput (gal/mo.):
 Annual Turnovers:
 Turnover Factor:
 Maximum Liquid Volume (gal):
 Maximum Liquid Height (ft):
 Tank Diameter (ft):
 Working Loss Product Factor:

0.3800	0.3800	0.3800
2,080.0000	1,874.0000	1,833.0000
2.8093	2.8093	2.8093
1.0000	1.0000	1.0000
8,400.0000	8,400.0000	8,400.0000
14.0000	14.0000	14.0000
11.0000	11.0000	11.0000
1.0000	1.0000	1.0000

Total Losses (lb):

8.7769	8.6642	8.1457
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Shell/Motiva 0008301

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK010 - Vertical Fixed Roof Tank
Brooklyn, New York

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Generic Additive	6.07	19.52	25.59

Shell/Motiva 0008303

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK041
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	24.00
Volume (gallons):	79,800.00
Turnovers:	97.67
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1
Roof Leg or Hanger Well/Adjustable	5

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK041 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
denatured ethanol	Jun	62.56	57.56	67.57	63.22	1.7033	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jul	65.18	60.26	70.09	63.22	1.8039	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Aug	64.49	59.83	69.14	63.22	1.7770	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

BK041 - Internal Floating Roof Tank
BROOKLYN, NY

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						1.7015	1.8088	1.7800				
Seal Factor A (lb-mole/ft-yr):						0.6000	0.6000	0.6000				
Seal Factor B (lb-mole/ft-yr (mph)*n):						0.4000	0.4000	0.4000				
Value of Vapor Pressure Function:						0.0308	0.0327	0.0322				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						1.7033	1.8039	1.7770				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						6.5113	8.1378	5.6868				
Number of Columns:						1.0000	1.0000	1.0000				
Effective Column Diameter (ft):						1.0000	1.0000	1.0000				
Net Throughput (gal/hr):						673,001.8000	635,238.8000	686,493.8000				
Shell Clingage Factor (bb/1000 sqft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						6.6100	6.6100	6.6100				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Deck Filling Losses (lb):						18.3860	19.5452	19.2341				
Value of Vapor Pressure Function:						0.0308	0.0327	0.0322				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Filling Loss Fac.(lb-mole/yr):						155.6000	155.6000	155.6000				
Deck Seam Losses (lb):						0.0000	0.0000	0.0000				
Deck Seam Length (ft):						0.0000	0.0000	0.0000				
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):						0.0000	0.0000	0.0000				
Deck Seam Length Factor (ft/sqft):						0.0000	0.0000	0.0000				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Total Losses (lb):						26.5988	27.4916	26.6609				

Roof Fitting/Status	Quantity	KFa(lb-mole/yr)	Roof Filling Loss Factors KFb(lb-mole/yr mph*n)	m	Losses(lb)
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	58.00	0.00	0.00	20.7506
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	0.00	1.0375
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.38	1.5934
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1	10.00	0.00	0.00	3.7055
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	15.9235
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	14.6366

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK041 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Filling Loss	Deck Seam Loss	
denatured ethanol	5.29	18.32	57.17	0.00	80.77

TANKS 4.0.9d **Emissions Report - Detail Format** **Tank Identification and Physical Characteristics**

Identification

User Identification:	BK042
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	24.00
Volume (gallons):	78,800.00
Turnovers:	97.67
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal:	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status

	Quantity
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1
Roof Leg or Hanger Well/Adjustable	5

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d **Emissions Report - Detail Format** **Liquid Contents of Storage Tank**

BK042 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
denatured ethanol	Jun	62.56	57.55	67.57	53.22	1.7033	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jul	65.18	60.26	70.09	53.22	1.8039	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Aug	64.49	59.83	69.14	53.22	1.7770	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK042 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						1.7015	1.8088	1.7800				
Seal Factor A (lb-mole/lb-yr):						0.6000	0.6000	0.6000				
Seal Factor B (lb-mole/lb-yr (mph) ^{1/2}):						0.4000	0.4000	0.4000				
Value of Vapor Pressure Function:						0.0308	0.0327	0.0322				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						1.7033	1.8039	1.7770				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						6.5113	6.1378	5.6688				
Number of Columns:						1.0000	1.0000	1.0000				
Effective Column Diameter (ft):						1.0000	1.0000	1.0000				
Net Throughput (gal/mo):						673,901.8000	635,239.8000	586,493.8000				
Shell Clingage Factor (bbt/1000 sq ft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						6.6100	6.6100	6.6100				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Deck Fitting Losses (lb):						18.2442	19.3845	19.0858				
Value of Vapor Pressure Function:						0.0308	0.0327	0.0322				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Fitting Loss Fact. (lb-mole/yr):						154.4000	154.4000	154.4000				
Deck Seam Losses (lb):						0.0000	0.0000	0.0000				
Deck Seam Length (ft):						0.0000	0.0000	0.0000				
Deck Seam Loss per Unit Length Factor (lb-mole/lb-yr):						0.0000	0.0000	0.0000				
Deck Seam Length Factor (ft/sq ft):						0.0000	0.0000	0.0000				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Total Losses (lb):						26.4570	27.3410	26.5326				

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFb (lb-mole/yr mph ^{1/2})	m	Losses (lb)
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	52.00	0.00	0.00	20.7508
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	0.5928
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.38	1.9934
Column Well (24-in. Diam.)/Pipe Col-Flex Fabric Sleeve Seal	1	10.00	0.00	0.00	3.7055
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	15.9335
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	14.6366

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK042 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
denatured ethanol	5.29	18.32	56.72	0.00	80.33

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK043
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	43.00
Volume (gallons):	79,800.00
Turnovers:	238.46
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal:	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1
Roof Leg or Hanger Well/Adjustable	5

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK043 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Star Gasoline (RVP 8.1)	Jun	62.56	57.55	67.57	53.22	4.3143	N/A	N/A	68.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.28	70.09	53.22	4.5422	N/A	N/A	68.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.48	59.83	69.14	53.22	4.4814	N/A	N/A	68.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

BK043 - Internal Floating Roof Tank
BROOKLYN, NY

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						12.2939	13.0745	12.8645				
Seal Factor A (lb-mole/ft-yr):						0.6000	0.6000	0.6000				
Seal Factor B (lb-mole/ft-yr (mph)*n):						0.4000	0.4000	0.4000				
Value of Vapor Pressure Function:						0.0886	0.0921	0.0907				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						4.3143	4.5422	4.4814				
Tank Diameter (ft):						43.0000	43.0000	43.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						6.7156	6.3069	5.7677				
Number of Columns:						1.0000	1.0000	1.0000				
Effective Column Diameter (ft):						1.0000	1.0000	1.0000				
Net Throughput (gal/mo):						1,670,203.3000	1,568,328.0000	1,434,485.7000				
Shell Clingage Factor (bbl/1000 sqft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						5.0170	5.0170	5.0170				
Tank Diameter (ft):						43.0000	43.0000	43.0000				
Deck Fitting Losses (lb):						73.5727	78.2447	76.9875				
Value of Vapor Pressure Function:						0.0886	0.0921	0.0907				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Fitting Loss Fact. (lb-mole/yr):						154.4000	154.4000	154.4000				
Deck Seam Losses (lb):						0.0000	0.0000	0.0000				
Deck Seam Length (ft):						0.0000	0.0000	0.0000				
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):						0.0000	0.0000	0.0000				
Deck Seam Length Factor (ft/sqft):						0.0000	0.0000	0.0000				
Tank Diameter (ft):						43.0000	43.0000	43.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Total Losses (lb):						92.5821	97.6263	95.8196				

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFb (lb-mole/(yr*mph*n))	m	Losses (lb)
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	58.00	0.00	0.00	83.7004
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	2.3914
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.38	6.4270
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1	10.00	0.00	0.00	14.9465
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	64.2700
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	59.0387

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK043 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Star Gasoline (RVP 8.1)	38.23	18.79	228.80	0.00	285.83

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	BK044
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	24.00
Volume (gallons):	79,800.00
Turnovers:	236.46
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal:	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1
Roof Leg or Hanger Well/Adjustable	5

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK044 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Star Gasoline (RVP 8.1)	Jun	62.56	57.55	67.57	53.22	4.3143	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.26	70.09	53.22	4.5422	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.49	59.83	69.14	53.22	4.4814	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3

Shell/Motiva 0008320

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK044 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						6.6617	7.2974	7.1802				
Seal Factor A (lb-mole/ft-yr):						0.6000	0.6000	0.6000				
Seal Factor B (lb-mole/ft-yr (mph)*n):						0.4000	0.4000	0.4000				
Value of Vapor Pressure Function:						0.0966	0.0921	0.0907				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						4.3143	4.5422	4.4814				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						12.2485	11.5014	10.5197				
Number of Columns:						1.0000	1.0000	1.0000				
Effective Column Diameter (ft):						1.0000	1.0000	1.0000				
Net Throughput (gal/no.):						1,670,203.9200	1,568,328.0000	1,434,455.7000				
Shell Clingage Factor (bbl/1000 sqft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						5.0170	5.0170	5.0170				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Deck Filling Losses (lb):						73.5727	78.2447	76.9875				
Value of Vapor Pressure Function:						0.0966	0.0921	0.0907				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Filling Loss Fact.(lb-mole/yr):						154.4000	154.4000	154.4000				
Deck Seam Losses (lb):						0.0000	0.0000	0.0000				
Deck Seam Length (ft):						0.0000	0.0000	0.0000				
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):						0.0000	0.0000	0.0000				
Deck Seam Length Factor(Nsq/ft):						0.0000	0.0000	0.0000				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Total Losses (lb):						92.6829	97.0436	94.6873				

Roof Fitting/Status	Quantity	KFa(lb-mole/yr)	Roof Filling Loss Factors KFB(lb-mole/(yr mph*n))	m	Losses(lb)
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	83.7004
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	2.3914
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.38	6.4270
Column Well (24-in. Diam.)/Pipe Col-Flex Fabric Sleeve Seal	1	10.00	0.00	0.00	14.9465
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	64.2700
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	59.0387

Shell/Motiva 0008321

Link

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK044 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Star Gasoline (RVP 8.1)	21.34	34.27	228.80	0.00	284.41

Shell/Motiva 0008323

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK045
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	24.00
Volume (gallons):	79,800.00
Turnovers:	97.67
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal:	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Roof Leg or Hanger Well/Adjustable	5
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK045 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
denatured ethanol	Jun	62.56	57.55	67.57	53.22	1.7033	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jul	65.16	60.26	70.09	53.22	1.8039	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Aug	64.49	59.83	69.14	53.22	1.7770	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3

Shell/Motiva 0008325

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK045 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						1.7015	1.8088	1.7800				
Seal Factor A (lb-mole/ft-yr):						0.6000	0.6000	0.6000				
Seal Factor B (lb-mole/ft-yr (mph) ^{1/2}):						0.4000	0.4000	0.4000				
Value of Vapor Pressure Function:						0.0308	0.0327	0.0322				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						1.7033	1.8039	1.7770				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						6.5113	6.1378	5.8668				
Number of Columns:						1.0000	1.0000	1.0000				
Effective Column Diameter (ft):						1.0000	1.0000	1.0000				
Net Throughput (galmo.):						673,901.8000	635,239.8000	586,489.8000				
Shell Clingside Factor (lb/1,000 sqft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						6.6100	6.6100	6.6100				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Deck Filling Losses (lb):						18.2442	19.3945	19.0858				
Value of Vapor Pressure Function:						0.0308	0.0327	0.0322				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Filling Loss Fact.(lb-mole/yr):						154.4000	154.4000	154.4000				
Deck Seam Losses (lb):						0.0000	0.0000	0.0000				
Deck Seam Length (ft):						0.0000	0.0000	0.0000				
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):						0.0000	0.0000	0.0000				
Deck Seam Length Factor(ft/sqft):						0.0000	0.0000	0.0000				
Tank Diameter (ft):						24.0000	24.0000	24.0000				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Total Losses (lb):						26.4570	27.3410	26.5326				

Roof Filling/Status	Quantity	Roof Filling Loss Factors		m	Losses(lb)
		KFa(lb-mole/yr)	KFb(lb-mole/(yr mph ^{1/2}))		
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	20.7506
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.50	0.00	0.00	0.5929
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.38	1.5934
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1	10.00	0.00	0.00	3.7055
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	14.6366
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	0.00	15.9335

Shell/Motiva 0008326

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK045 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
denatured ethanol	5.29	18.32	58.72	0.00	80.33

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK046
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	46.00
Volume (gallons):	79,800.00
Turnovers:	97.67
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal:	Rim-mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1
Roof Leg or Hanger Well/Adjustable	5

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK046 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
denatured ethanol	Jun	62.56	57.95	67.57	53.22	1.7033	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Jul	65.18	60.26	70.09	53.22	1.8039	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3
denatured ethanol	Aug	64.49	59.83	69.14	53.22	1.7770	N/A	N/A	46.0700			46.07	Option 4: RVP=3.5, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

BK046 - Internal Floating Roof Tank
BROOKLYN, NY

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						3.2613	3.4689	3.4117				
Seal Factor A (lb-mole/ft-yr):						0.6000	0.6000	0.6000				
Seal Factor B (lb-mole/ft-yr (mph) ^{1/2}):						0.4000	0.4000	0.4000				
Value of Vapor Pressure Function:						0.0308	0.0327	0.0322				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						1.7033	1.8039	1.7770				
Tank Diameter (ft):						46.0000	46.0000	46.0000				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						3.3322	3.1411	2.9000				
Number of Columns:						1.0000	1.0000	1.0000				
Effective Column Diameter (ft):						1.0000	1.0000	1.0000				
Net Throughput (gal/mo.):						673,901.8000	635,239.8000	686,499.8000				
Shell Clingage Factor (cc/1000 sq ft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						6.6100	6.6100	6.6100				
Tank Diameter (ft):						46.0000	46.0000	46.0000				
Deck Fitting Losses (lb):						18.2442	19.3945	19.0658				
Value of Vapor Pressure Function:						0.0308	0.0327	0.0322				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Fitting Loss Fact. (lb-mole/yr):						154.4000	154.4000	154.4000				
Deck Seam Losses (lb):						0.0000	0.0000	0.0000				
Deck Seam Length (ft):						0.0000	0.0000	0.0000				
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):						0.0000	0.0000	0.0000				
Deck Seam Length Factor (ft/sq ft):						0.0000	0.0000	0.0000				
Tank Diameter (ft):						46.0000	46.0000	46.0000				
Vapor Molecular Weight (lb/lb-mole):						46.0700	46.0700	46.0700				
Product Factor:						1.0000	1.0000	1.0000				
Total Losses (lb):						24.8377	26.0024	25.3975				

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors		Losses (lb)
		KFa (lb-mole/yr)	KFb (lb-mole/yr mph ^{1/2} /ft)	
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	20.7506
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.50	0.00	0.5329
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	1.5934
Column Well (24-in. Diam.)/Pipe Col.-Flex, Fabric Sleeve Seal	1	10.00	0.00	3.7055
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Gask.	1	43.00	0.00	15.8335
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	14.6386

Shell/Motiva 0008331

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK046 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
denatured ethanol	10.14	9.37	56.72	0.00	76.24

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	B/K047
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	46.00
Volume (gallons):	373,800.00
Turnovers:	229.97
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal:	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Roof Leg or Hanger Well/Adjustable	5
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Ungask.	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK047 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Star Gasoline (RVP 8.1)	Jun	62.56	57.55	67.57	53.22	4.3143	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.26	70.09	53.22	4.5422	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.49	59.63	69.14	53.22	4.4814	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3

Shell/Motiva 0008335

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

BK047 - Internal Floating Roof Tank
BROOKLYN, NY

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						35.0709	37.2980	36.6987				
Seal Factor A (lb-mole/lb-yr):						1.6000	1.6000	1.6000				
Seal Factor B (lb-mole/lb-yr (mph) ^{0.7}):						0.3000	0.3000	0.3000				
Value of Vapor Pressure Function:						0.0866	0.0921	0.0907				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						4.3143	4.5422	4.4814				
Tank Diameter (ft):						48.0000	48.0000	48.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						23.5556	26.8138	24.5250				
Number of Columns:						1.0000	1.0000	1.0000				
Effective Column Diameter (ft):						1.0000	1.0000	1.0000				
Net Throughput (gal/min):						7,608,703.7000	7,144,605.5000	6,534,742.8000				
Shell Clingage Factor (bbl/1000 sq ft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						5.0170	5.0170	5.0170				
Tank Diameter (ft):						48.0000	48.0000	48.0000				
Deck Filling Losses (lb):						84.5323	89.9004	88.4558				
Value of Vapor Pressure Function:						0.0866	0.0921	0.0907				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Filling Loss Fact.(lb-mole/yr):						177.4000	177.4000	177.4000				
Deck Seam Losses (lb):						0.0000	0.0000	0.0000				
Deck Seam Length (ft):						0.0000	0.0000	0.0000				
Deck Seam Loss per Unit Length Factor (lb-mole/lb-yr):						0.0000	0.0000	0.0000				
Deck Seam Length Factor(W _{eq} ft):						0.0000	0.0000	0.0000				
Tank Diameter (ft):						48.0000	48.0000	48.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Total Losses (lb):						148.1588	154.0122	149.8795				

Roof Fitting/Status	Quantity	Roof Filling Loss Factors		m	Losses(lb)
		KFa(lb-mole/yr)	KFb(lb-mole/(yr mph ^{0.7} n))		
Roof Leg or Hanger Well/Adjustable	5	7.90	0.00	0.00	59.0387
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Ungask.	1	43.00	0.00	0.00	64.2700
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.38	6.4270
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	2.3914
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	56.00	0.00	0.00	83.7004
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	0.00	49.3235

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK047 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Star Gasoline (RVP 8.1)	109.07	79.89	262.89	0.00	451.85

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	BK048
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	46.00
Volume (gallons):	373,800.00
Turnovers:	229.97
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal:	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Roof Leg or Hanger Well/Adjustable	5
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Ungask.	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK048 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Frac.	Vapor Mass Frac.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Star Gasoline (RVP 8.1)	Jun	62.56	57.55	67.57	53.22	4.3143	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.26	70.09	53.22	4.5422	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.40	59.83	69.14	53.22	4.4814	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3

Shell/Motiva 0008340

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

BK048 - Internal Floating Roof Tank
BROOKLYN, NY

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						35.0709	37.2980	38.8987				
Seal Factor A (lb-mole/ft-yr):						1.6000	1.6000	1.6000				
Seal Factor B (lb-mole/ft-yr (mph)*n):						0.3000	0.3000	0.3000				
Value of Vapor Pressure Function:						0.0886	0.0921	0.0907				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						4.3143	4.5422	4.4814				
Tank Diameter (ft):						48.0000	48.0000	48.0000				
Vapor Molecular Weight (lb/lb-mole):						68.0000	68.0000	68.0000				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						28.5566	28.8138	24.5260				
Number of Columns:						1.0000	1.0000	1.0000				
Effective Column Diameter (ft):						1.0000	1.0000	1.0000				
Net Throughput (gal/mo.):						7,608,703.7000	7,144,605.5000	8,634,742.8000				
Shell Clingage Factor (56/1000 sqft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						5.0170	5.0170	5.0170				
Tank Diameter (ft):						48.0000	48.0000	48.0000				
Deck Filling Losses (lb):						84.5323	89.9004	88.4658				
Value of Vapor Pressure Function:						0.0886	0.0921	0.0907				
Vapor Molecular Weight (lb/lb-mole):						68.0000	68.0000	68.0000				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Filling Loss Fac.(lb-mole/yr):						177.4000	177.4000	177.4000				
Deck Seam Losses (lb):						0.0000	0.0000	0.0000				
Deck Seam Length (ft):						0.0000	0.0000	0.0000				
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):						0.0000	0.0000	0.0000				
Deck Seam Length Factor (lb/sqft):						0.0000	0.0000	0.0000				
Tank Diameter (ft):						48.0000	48.0000	48.0000				
Vapor Molecular Weight (lb/lb-mole):						68.0000	68.0000	68.0000				
Product Factor:						1.0000	1.0000	1.0000				
Total Losses (lb):						148.1588	154.0122	149.6795				

Roof Fitting/Status	Quantity	KFa(lb-mole/yr)	Roof Fitting Loss Factors		m	Losses(lb)
			KFa(lb-mole/yr)	KFb(lb-mole/(yr mph*n))		
Roof Leg or Hanger Well/Adjustable	5	7.90		0.00	0.00	59.0387
Sample Pipe or Well (24-in. Diam.)/Slotted Pipe-Sliding Cover, Ungask.	1	43.00		0.00	0.00	64.2700
Column Well (24-in. Diam.)/Bull-Up Col.-Sliding Cover, Gask.	1	33.00		0.00	0.00	49.3235
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30		17.00	0.38	6.4270
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60		0.00	0.00	2.3914
Ladder Well (36-in. Diam.)/Sliding Cover, Gasketed	1	58.00		0.00	0.00	83.7004

Shell/Motiva 0008341

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK048 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Star Gasoline (RVP 8.1)	109.07	79.89	262.89	0.00	451.85

Shell/Motiva 0008343

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	BK049
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	47.00
Volume (gallons):	420,000.00
Turnovers:	84.12
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal:	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Roof Leg or Hanger Well/Adjustable	12
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Float	1

Meteorological Data used in Emissions Calculations: JFK Intl Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK049 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Star Gasoline (RVP 8.1)	Jun	62.56	57.55	67.57	53.22	4.3143	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.26	70.09	53.22	4.5422	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.49	59.83	69.14	53.22	4.4814	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3

Shell/Motiva 0008345

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK049 - Internal Floating Roof Tank **BROOKLYN, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						35.8333	38.1088	37.4365				
Seal Factor A (lb-mole/ft-yr):						1.6000	1.6000	1.6000				
Seal Factor B (lb-mole/ft-yr (mph)*n):						0.3000	0.3000	0.3000				
Value of Vapor Pressure Function:						0.0866	0.0921	0.0907				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						4.3143	4.5422	4.4814				
Tank Diameter (ft):						47.0000	47.0000	47.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						10.5284	10.0602	9.5217				
Number of Columns:						1.0000	1.0000	1.0000				
Effective Column Diameter (ft):						1.0000	1.0000	1.0000				
Net Throughput (gallons):						2,867,612.5000	2,740,080.0000	2,593,408.5000				
Shell Coating Factor (bbl/1000 sqft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						5.0170	5.0170	5.0170				
Tank Diameter (ft):						47.0000	47.0000	47.0000				
Deck Fitting Losses (lb):						108.3577	115.2387	113.3870				
Value of Vapor Pressure Function:						0.0866	0.0921	0.0907				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Fitting Loss Fact (lb-mole/yr):						227.4000	227.4000	227.4000				
Deck Seam Losses (lb):						0.0000	0.0000	0.0000				
Deck Seam Length (ft):						0.0000	0.0000	0.0000				
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):						0.0000	0.0000	0.0000				
Deck Seam Length Factor (ft/sqft):						0.0000	0.0000	0.0000				
Tank Diameter (ft):						47.0000	47.0000	47.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Total Losses (lb):						154.7194	163.4077	160.4052				

Roof Fitting/Status	Quantity	KF _F (lb-mole/yr)	Roof Fitting Loss Factors KF _B (lb-mole/(yr mph*n))	m	Losses(lb)
Roof Leg or Hanger Well/Adjustable	12	7.90	0.00	0.00	141.6929
Column Well (24-in. Diam.)/Pipe Col-Flex, Fabric Sleeve Seal	1	10.00	0.00	0.00	14.8465
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	20.9251
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	2.3914
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1	76.00	0.00	0.00	113.5935
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Float	1	31.00	36.00	2.00	46.3342

Shell/Motiva 0008346

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK049 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	
Star Gasoline (RVP 8.1)	111.44	30.11	336.98	0.00	478.53

TANKS 4.0.9d

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification

User Identification:	BK050
City:	BROOKLYN
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	47.00
Volume (gallons):	424,200.00
Turnovers:	83.29
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal:	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Roof Leg or Hanger Well/Adjustable	12
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Float	1
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

Shell/Motiva 0008349

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK050 - Internal Floating Roof Tank
BROOKLYN, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Star Gasoline (RVP 8.1)	Jun	62.58	57.55	67.57	53.22	4.3143	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Jul	65.18	60.26	70.09	53.22	4.5422	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3
Star Gasoline (RVP 8.1)	Aug	64.49	59.83	69.14	53.22	4.4614	N/A	N/A	66.0000			66.00	Option 4: RVP=8.1, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

BK050 - Internal Floating Roof Tank
BROOKLYN, NY

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):						35.8333	28.1088	37.4985				
Seal Factor A (lb-mole/ft-yr):						1.6000	1.6000	1.6000				
Seal Factor B (lb-mole/ft-yr (mph) ^{1/2}):						0.3000	0.3000	0.3000				
Value of Vapor Pressure Function:						0.0866	0.0921	0.0907				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						4.3143	4.5422	4.4814				
Tank Diameter (ft):						47.0000	47.0000	47.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Withdrawal Losses (lb):						10.5284	10.0602	9.5217				
Number of Columns:						1.0000	1.0000	1.0000				
Effective Column Diameter (ft):						1.0000	1.0000	1.0000				
Net Throughput (gal/mo):						2,867,612.5000	2,740,080.0000	2,593,403.5000				
Shell Clingage Factor (bbl/1000 sqft):						0.0015	0.0015	0.0015				
Average Organic Liquid Density (lb/gal):						5.0170	5.0170	5.0170				
Tank Diameter (ft):						47.0000	47.0000	47.0000				
Deck Fitting Losses (lb):						108.3577	115.2367	113.3870				
Value of Vapor Pressure Function:						0.0866	0.0921	0.0907				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Tot. Roof Fitting Loss Fact. (lb-mole/yr):						227.4000	227.4000	227.4000				
Deck Seam Losses (lb):						0.0000	0.0000	0.0000				
Deck Seam Length (ft):						0.0000	0.0000	0.0000				
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):						0.0000	0.0000	0.0000				
Deck Seam Length Factor (ft/sqft):						0.0000	0.0000	0.0000				
Tank Diameter (ft):						47.0000	47.0000	47.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Product Factor:						1.0000	1.0000	1.0000				
Total Losses (lb):						154.7194	163.4077	160.4052				

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFb (lb-mole/yr mph ^{1/2})	m	Losses (lb)
Roof Leg or Hanger Well/Adjustable	12	7.90	0.00	0.00	141.6929
Column Well (24-in. Diam.)/Pipe Col.-Flex. Fabric Sleeve Seal	1	10.00	0.00	0.00	14.9465
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	20.9251
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	2.3914
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Float	1	31.00	36.00	2.00	46.3342
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1	76.00	0.00	0.00	113.5935

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK050 - Internal Floating Roof Tank
BROOKLYN, NY

Components	Losses(lbs)				Total Emissions
	Rim Seal Loss	Withdrawl Loss	Deck Filling Loss	Deck Seam Loss	
Star Gasoline (RVP 8.1)	111.44	30.11	336.98	0.00	478.53

Shell/Motiva 0008353

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK052
City:	Brooklyn
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):	18.00
Diameter (ft):	6.00
Volume (gallons):	3,780.00
Turnovers:	2.81
Net Throughput(gal/yr):	10,619.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

Shell/Motiva 0008354

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK052 - Horizontal Tank
Brooklyn, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Generic Additive	Jun	62.56	57.55	67.57	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Jul	65.18	60.26	70.09	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Aug	64.49	59.33	69.14	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36

Shell/Motiva 0008355

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

BK052 - Horizontal Tank
Brooklyn, NY

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):						2.4223	2.4248	2.2883				
Vapor Space Volume (cu ft):						324.1643	324.1643	324.1643				
Vapor Density (lb/cu ft):						0.0077	0.0077	0.0077				
Vapor Space Expansion Factor:						0.0342	0.0333	0.0313				
Vented Vapor Saturation Factor:						0.9459	0.9459	0.9459				
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):						324.1643	324.1643	324.1643				
Tank Diameter (ft):						6.0000	6.0000	6.0000				
Effective Diameter (ft):						11.7294	11.7294	11.7294				
Vapor Space Outage (ft):						3.0000	3.0000	3.0000				
Tank Shell Length (ft):						18.0000	18.0000	18.0000				
Vapor Density												
Vapor Density (lb/cu ft):						0.0077	0.0077	0.0077				
Vapor Molecular Weight (lb/lb-mole):						120.0000	120.0000	120.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Daily Avg. Liquid Surface Temp. (deg. R):						522.2313	524.8471	524.1592				
Daily Average Ambient Temp. (deg. F):						68.9500	74.9600	74.0000				
Ideal Gas Constant R												
: (psia cu ft / (lb-mol-deg R)):						10.731	10.731	10.731				
Liquid Bulk Temperature (deg. R):						512.8900	512.8900	512.8900				
Tank Paint Solar Absorptance (Shell):						0.1700	0.1700	0.1700				
Daily Total Solar Insolation Factor (Btu/sq ft day):						1,832.0000	1,784.0000	1,583.0000				
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:						0.0342	0.0333	0.0313				
Daily Vapor Temperature Range (deg. R):						20.0255	19.6518	18.6231				
Daily Vapor Pressure Range (psia):						0.0000	0.0000	0.0000				
Breather Vent Press. Setting Range (psia):						0.0600	0.0600	0.0600				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Daily Avg. Liquid Surface Temp. (deg R):						522.2313	524.8471	524.1592				
Daily Min. Liquid Surface Temp. (deg R):						517.2249	519.9342	518.5034				
Daily Max. Liquid Surface Temp. (deg R):						527.2377	529.7601	528.8149				
Daily Ambient Temp. Range (deg. R):						15.9000	15.5000	15.4000				
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:						0.9459	0.9459	0.9459				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Space Outage (ft):						3.0000	3.0000	3.0000				
Working Losses (lb):						0.9573	0.9137	0.8482				
Vapor Molecular Weight (lb/lb-mole):						120.0000	120.0000	120.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Net Throughput (gal/min.):						840.4000	888.3000	824.6000				
Annual Turnovers:						2.8093	2.8093	2.8093				
Turnover Factor:						1.0000	1.0000	1.0000				
Tank Diameter (ft):						6.0000	6.0000	6.0000				
Working Loss Product Factor:						1.0000	1.0000	1.0000				

Total Losses (lb):

3,1584

3,3385

3,3896

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK052 - Horizontal Tank
Brooklyn, NY

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Generic Additive	2.73	7.14	9.86

Shell/Motiva 0008359

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK053
City:	Brooklyn
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):	16.00
Diameter (ft):	8.00
Volume (gallons):	4,200.00
Turnovers:	1.92
Net Throughput(gal/yr):	8,050.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK053 - Horizontal Tank
Brooklyn, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Contact Water	Jun	62.56	57.55	67.57	53.22				66.0000			66.00	
Contact Water	Jul	65.18	60.26	70.09	53.22				66.0000			66.00	
Contact Water	Aug	64.49	59.83	69.14	53.22				66.0000			66.00	

Shell/Motiva 0008361

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK053 - Horizontal Tank **Brooklyn, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):						0.0000	0.0000	0.0000				
Vapor Space Volume (cu ft):						512.2597	512.2597	612.2597				
Vapor Density (lb/cu ft):						0.0000	0.0000	0.0000				
Vapor Space Expansion Factor:						0.0343	0.0334	0.0314				
Vented Vapor Saturation Factor:						1.0000	1.0000	1.0000				
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):						512.2597	512.2597	612.2597				
Tank Diameter (ft):						8.0000	8.0000	8.0000				
Effective Diameter (ft):						12.7694	12.7694	12.7694				
Vapor Space Outage (ft):						4.0000	4.0000	4.0000				
Tank Shell Length (ft):						16.0000	16.0000	16.0000				
Vapor Density												
Vapor Density (lb/cu ft):						0.0000	0.0000	0.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.0000	0.0000	0.0000				
Daily Avg. Liquid Surface Temp. (deg. R):						522.2313	524.8471	524.1592				
Daily Average Ambient Temp. (deg. F):						68.9500	74.9500	74.0000				
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):						10.731	10.731	10.731				
Liquid Bulk Temperature (deg. R):						512.8900	512.8900	512.8900				
Tank Paint Solar Absorptance (Shell):						0.1700	0.1700	0.1700				
Daily Total Solar Insulation Factor (Btu/sq ft day):						1,802.0000	1,784.0000	1,583.0000				
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:						0.0343	0.0334	0.0314				
Daily Vapor Temperature Range (deg. R):						20.0255	19.6518	18.8231				
Daily Vapor Pressure Range (psia):						0.0000	0.0000	0.0000				
Breather Vent Press. Setting Range (psia):						0.0600	0.0600	0.0600				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.0000	0.0000	0.0000				
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):						0.0000	0.0000	0.0000				
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):						0.0000	0.0000	0.0000				
Daily Avg. Liquid Surface Temp. (deg R):						522.2313	524.8471	524.1592				
Daily Min. Liquid Surface Temp. (deg R):						517.2249	519.9342	519.6034				
Daily Max. Liquid Surface Temp. (deg R):						527.2377	529.7601	528.6149				
Daily Ambient Temp. Range (deg. R):						15.9000	15.5000	15.4000				
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:						1.0000	1.0000	1.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.0000	0.0000	0.0000				
Vapor Space Outage (ft):						4.0000	4.0000	4.0000				
Working Losses (lb):						0.0000	0.0000	0.0000				
Vapor Molecular Weight (lb/lb-mole):						66.0000	66.0000	66.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.0000	0.0000	0.0000				
Net Throughput (gal/mo.):						670.8333	670.8333	670.8333				
Annual Turnovers:						1.9167	1.9167	1.9167				
Turnover Factor:						1.0000	1.0000	1.0000				
Tank Diameter (ft):						8.0000	8.0000	8.0000				
Working Loss Product Factor:						1.0000	1.0000	1.0000				

0.0000

0,000

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK053 - Horizontal Tank
Brooklyn, NY

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Contact Water	0.00	0.00	0.00

Shell/Motiva 0008365

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK054
City:	Brooklyn
State:	NY
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):	14.00
Diameter (ft):	8.00
Volume (gallons):	4,200.00
Turnovers:	2.81
Net Throughput(gal/yr):	11,789.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK054 - Horizontal Tank
Brooklyn, NY

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Generic Additive	Jun	62.56	57.55	67.57	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Jul	65.18	60.26	70.09	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36
Generic Additive	Aug	64.49	59.83	69.14	53.22	0.3600	0.3600	0.3600	120.0000			1,410.00	Option 1: VP60 = .36 VP70 = .36

Shell/Motiva 0008367

TANKS 4.0.9d **Emissions Report - Detail Format** **Detail Calculations (AP-42)**

BK054 - Horizontal Tank **Brooklyn, NY**

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):						3.2900	3.2933	3.1079				
Vapor Space Volume (cu ft):						448.2272	448.2272	448.2272				
Vapor Density (lb/cu ft):						0.0077	0.0077	0.0077				
Vapor Space Expansion Factor:						0.0342	0.0333	0.0313				
Vented Vapor Saturation Factor:						0.9291	0.9291	0.9291				
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):						448.2272	448.2272	448.2272				
Tank Diameter (ft):						8.0000	8.0000	8.0000				
Effective Diameter (ft):						11.9447	11.9447	11.9447				
Vapor Space Outage (ft):						4.0000	4.0000	4.0000				
Tank Shell Length (ft):						14.0000	14.0000	14.0000				
Vapor Density												
Vapor Density (lb/cu ft):						0.0077	0.0077	0.0077				
Vapor Molecular Weight (lb/lb-mole):						120.0000	120.0000	120.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Daily Avg. Liquid Surface Temp. (deg. R):						522.2313	524.8471	524.1592				
Daily Average Ambient Temp. (deg. F):						68.9500	74.9500	74.0000				
Ideal Gas Constant R												
(psia cu ft / (lb-mol-deg R)):						10.731	10.731	10.731				
Liquid Bulk Temperature (deg. R):						512.8800	512.8900	512.8900				
Tank Paint Solar Absorptance (Shell):						0.1700	0.1700	0.1700				
Daily Total Solar Insolation Factor (Btu/sq ft day):						1,802.0000	1,784.0000	1,583.0000				
Vapor Space Expansion Factor												
Vapor Space Expansion Factor:						0.0342	0.0333	0.0313				
Daily Vapor Temperature Range (deg. R):						20.0255	19.6518	18.6231				
Daily Vapor Pressure Range (psia):						0.0000	0.0000	0.0000				
Breather Vent Press. Setting Range (psia):						0.0600	0.0600	0.0600				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Daily Avg. Liquid Surface Temp. (deg R):						522.2313	524.8471	524.1592				
Daily Min. Liquid Surface Temp. (deg R):						517.2240	519.9342	519.5034				
Daily Max. Liquid Surface Temp. (deg R):						527.2377	529.7601	528.8149				
Daily Ambient Temp. Range (deg. R):						15.9000	15.5000	15.4000				
Vented Vapor Saturation Factor												
Vented Vapor Saturation Factor:						0.9291	0.9291	0.9291				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Vapor Space Outage (ft):						4.0000	4.0000	4.0000				
Working Losses (lb):						1.0748	1.0151	0.9426				
Vapor Molecular Weight (lb/lb-mole):						120.0000	120.0000	120.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.3600	0.3600	0.3600				
Net Throughput (gal/mo.):						1,044.9000	986.9000	916.3000				
Annual Turnovers						2.8093	2.8093	2.8093				
Turnover Factor:						1.0000	1.0000	1.0000				
Tank Diameter (ft):						8.0000	8.0000	8.0000				
Working Loss Product Factor:						1.0000	1.0000	1.0000				

Total Losses (lb):

4.3648

4.3084

4.0504

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK054 - Horizontal Tank
Brooklyn, NY

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Generic Additive	3.03	9.69	12.72

Shell/Motiva 0008371

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	BK055
City:	Brooklyn
State:	New York
Company:	SHELL OIL COMPANY - BROOKLYN
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):	27.83
Diameter (ft):	8.00
Volume (gallons):	10,466.00
Turnovers:	1.00
Net Throughput(gal/yr):	10,421.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: JFK Int'l Airport, New York (Avg Atmospheric Pressure = 14.7 psia)

Shell/Motiva 0008372

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

BK055 - Horizontal Tank
Brooklyn, New York

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	Jun	62.56	57.55	67.57	53.22	0.0078	0.0067	0.0086	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Jul	65.18	60.26	70.09	53.22	0.0082	0.0074	0.0090	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009
Distillate fuel oil no. 2	Aug	64.49	59.83	69.14	53.22	0.0081	0.0074	0.0089	130.0000			188.00	Option 1: VP60 = .0074 VP70 = .009

Shell/Motiva 0008373

TANKS 4.0.9d

Emissions Report - Detail Format

Detail Calculations (AP-42)

BK055 - Horizontal Tank Brooklyn, New York

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Standing Losses (lb):						0.1683	0.1763	0.1632				
Vapor Space Volume (cu ft):						891.0117	891.0117	891.0117				
Vapor Density (lb/cu ft):						0.0002	0.0002	0.0002				
Vapor Space Expansion Factor:						0.0344	0.0335	0.0315				
Vented Vapor Saturation Factor:						0.9983	0.9983	0.9983				
Tank Vapor Space Volume:												
Vapor Space Volume (cu ft):						891.0117	891.0117	891.0117				
Tank Diameter (ft):						8.0000	8.0000	8.0000				
Effective Diameter (ft):						16.8410	16.8410	16.8410				
Vapor Space Outage (ft):						4.0000	4.0000	4.0000				
Tank Shell Length (ft):						27.8300	27.8300	27.8300				
Vapor Density												
Vapor Density (lb/cu ft):						0.0002	0.0002	0.0002				
Vapor Molecular Weight (lb/lb-mole):						130.0000	130.0000	130.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.0078	0.0082	0.0081				
Daily Avg. Liquid Surface Temp. (deg. R):						522.2313	524.8471	524.1582				
Daily Average Ambient Temp. (deg. F):						68.9500	74.9500	74.0000				
Ideal Gas Constant R												
(psia cu ft / (lb-mol-deg R)):						10.731	10.731	10.731				
Liquid Bulk Temperature (deg. R):						512.8900	512.8900	512.8900				
Tank Paint Solar Absorptance (Shell):						0.1700	0.1700	0.1700				
Daily Total Solar Insolation Factor (Btu/sq ft day):						1,902.0000	1,784.0000	1,583.0000				
Vapor Space Expansion Factor:												
Vapor Space Expansion Factor (deg. R):						0.0344	0.0335	0.0315				
Daily Vapor Temperature Range (deg. R):						20.0255	19.6518	18.6231				
Daily Vapor Pressure Range (psia):						0.0019	0.0018	0.0015				
Breather Vent Press. Setting Range (psia):						0.0600	0.0600	0.0600				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.0078	0.0082	0.0081				
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):						0.0067	0.0074	0.0074				
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):						0.0086	0.0090	0.0089				
Daily Avg. Liquid Surface Temp. (deg R):						522.2313	524.8471	524.1582				
Daily Min. Liquid Surface Temp. (deg R):						517.2249	519.8342	519.5034				
Daily Max. Liquid Surface Temp. (deg R):						527.2377	529.7601	528.8149				
Daily Ambient Temp. Range (deg. R):						15.9000	15.5000	15.4000				
Vented Vapor Saturation Factor:												
Vented Vapor Saturation Factor:						0.9983	0.9983	0.9983				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.0078	0.0082	0.0081				
Vapor Space Outage (ft):						4.0000	4.0000	4.0000				
Working Losses (lb):						0.0000	0.0000	0.0000				
Vapor Molecular Weight (lb/lb-mole):						130.0000	130.0000	130.0000				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):						0.0078	0.0082	0.0081				
Net Throughput (gal/mo.):						0.0000	0.0000	0.0000				
Annual Turnovers:						0.9857	0.9857	0.9857				
Turnover Factor:						1.0000	1.0000	1.0000				
Tank Diameter (ft):						8.0000	8.0000	8.0000				
Working Loss Product Factor:						1.0000	1.0000	1.0000				

Total Losses (lb):

0.1632

0.1753

0.1653

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: June, July, August

BK055 - Horizontal Tank
Brooklyn, New York

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.00	0.50	0.50

TANKS 4.0.9d
Emissions Report - Detail Format
Total Emissions Summaries - All Tanks in Report

Emissions Report for: June, July, August

Tank Identification				Losses (lbs)
BK009	SHELL OIL COMPANY - BROOKLYN	Vertical Fixed Roof Tank	Brooklyn, NY	25.59
BK010	SHELL OIL COMPANY - BROOKLYN	Vertical Fixed Roof Tank	Brooklyn, New York	25.59
BK041	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	80.77
BK042	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	80.33
BK043	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	285.83
BK044	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	284.41
BK045	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	80.33
BK046	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	76.24
BK047	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	451.85
BK048	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	451.85
BK049	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	478.53
BK050	SHELL OIL COMPANY - BROOKLYN	Internal Floating Roof Tank	BROOKLYN, NY	478.53
BK052	SHELL OIL COMPANY - BROOKLYN	Horizontal Tank	Brooklyn, NY	9.86
BK053	SHELL OIL COMPANY - BROOKLYN	Horizontal Tank	Brooklyn, NY	0.00
BK054	SHELL OIL COMPANY - BROOKLYN	Horizontal Tank	Brooklyn, NY	12.72
BK055	SHELL OIL COMPANY - BROOKLYN	Horizontal Tank	Brooklyn, New York	0.50
Total Emissions for all Tanks:				2,822.94

Shell/Motiva 0008379

THE STATE OF NEW YORK 2008 EMISSION STATEMENT

Motiva Enterprises, LLC

Trinity Consultants

New York State Department of Environmental Conservation
625 Broadway, Albany, New York 12233



February 11, 2009

MOTIVA ENTERPRISES LLC
DEC ID: 2610100105
25 PAIDGE AVE
BROOKLYN, NY 11222
Attn: Environmental Manager

Dear Sir or Madam:

The New York State Department of Environmental Conservation (NYSDEC) is collecting 2008 fuel consumption data and air emissions from combustion, incineration, and industrial processes at facilities across the State. NYSDEC is required by the 1990 federal Clean Air Act to collect this information annually.

NYSDEC records indicate that your facility is required to have a Title V permit pursuant to 6 NYCRR 201-6, and therefore must complete the enclosed 2008 Emission Statement pursuant to 6 NYCRR Subpart 202-2.

NYSDEC uses permit records to provide an individualized emission statement for each facility. If your Title V permit, permit modification or permit renewal has not been issued you may not see updated information as provided in permit applications or previous emission statement submittals. Every attempt has been made to update emission statement information and have your form reflect current permit data. Despite these efforts, the duly authorized representative at the facility is required under 6 NYCRR 202-2.3(a)(1) to verify the truth, accuracy, and completeness of the emission statement.

Environmental Conservation Law (section 72-0303) requires operating permit fees to be based on the previous year's actual emissions, as demonstrated to the Department's satisfaction, and that the emission statement be used to demonstrate actual emissions.

Please return the completed statement by April 15, 2009 to:

Mr. Ronald W. Stannard, P.E.

NYS Department of Environmental
Conservation
Division of Air Resources
625 Broadway
Albany, NY 12233-3251

Enforcement action will be initiated for all emission statements that are post marked after April 15, 2009. If you do not respond, your fee bill will be based on maximum permitted emissions. Please note that this fee may be significantly higher than the fee associated with actual emissions. Do not pay your fee now. You will be billed at a later date.

Questions on the emission statement should be directed to Mr. Stannard or his staff at (518) 402-8396.

Sincerely,



David J. Shaw
Director
Division of Air Resources

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 1 - Certification

or: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

Attn: MARIO A D'ANTONIO or Environmental Manager

DARID: 610000GT07

Phone: _____

Primary SIC: 5171

DECID: 2610100105

Table of Contents

Section 1	Certification
Section 2.1	Facility Fuel Use (Combustion and Incineration)
Section 2.2	Combustion and Incineration Emissions Summary (Optional)
Section 2.3	Combustion and Incineration Process Emissions
Section 3.1	Industrial Emissions Summary
Section 3.2	Industrial Process Emissions
Section 4	Periodic Inventory Blank Reporting Forms

Section 1 - Certification

I (We) submit this document in order to comply with the major source annual emission statement requirements of Section 182 of the Clean Air Act and New York State Air Pollution Control Law. I (We) swear or affirm upon information and belief after reasonable inquiry that the information contained in such section(s) as designated by my signature, is based upon the best information available, and is complete and accurate in accordance with the instructions provided by the Department. I (We) understand that any false statement contained within this document is punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Fuel/Combustion and Incineration Process Certification

Print Full Name

Telephone #

Signature

Date

Industrial Process Certification

Print Full Name

Telephone #

Signature

Date

Notice: This information will be relied upon by DEC to implement Air Pollution Control Law.

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 2.1 - Facility Fuel Use (Combustion and Incineration)

Owner: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Section 2. - Total Fuel Consumption

Indicate which fuels this facility is capable of burning and provide actual quantity, sulfur content, ash content, and heat value for fuels used in 2008

Note - This survey is for stationary sources only. Do not include fuel used for mobile sources (e.g., fleet vehicles, forklifts, portable emergency generators, etc.)

Fuel Type	Quantity 2008	Units	Sulfur Avg (%)	Ash Avg (%)	Heat Value MMBTU/Unit
NUMBER 2 OIL	0	1000 gallons burned	NA	NA	NA
NATURAL GAS	1,356	million cubic feet burned	NA	NA	1020 Btu/scf

Sulfur, Ash, and Heat Value should be reported where N/A (not applicable) has not been preprinted. Otherwise, maximum default limits will be applied.

*- Specify Fuel

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement

Section 2.2 - Combustion and Incineration Emissions Summary (Optional)

Facility: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Total Combustion and Incineration Process Emissions by Contaminant

Enter the 2008 emissions total of each contaminant from this facility for combustion and incineration processes (if known)

Chem Family	CAS No.	Contaminant Name	Actual Emissions (Lbs/yr)
5	000630-08-0	CARBON MONOXIDE	113.91
8	007439-92-1	LEAD	-
2	007446-09-5	SULFUR DIOXIDE	0.81
7	0NY075-00-5	PM-10	10.31
11	0NY075-02-5	PM 2.5	10.31
1	0NY075-10-0	UNSPECIATED PARTICULATES (EMISSION STATEMENT USE ONLY)	10.31
7	0NY075-10-5	UNSPECIATED PM-10 (EMISSION STATEMENT USE ONLY)	10.31
3	0NY210-00-0	OXIDES OF NITROGEN	135.61
4	0NY998-10-0	UNSPECIATED VOC (EMISSION STATEMENT USE ONLY)	7.46

Note: This section is optional

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 2.3 - Combustion and Incineration Process Emissions

Owner: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process Data

SCC: 1-03-005-01 INS/COM:DISTILLATE;GRADES1&2

Emission Unit: U-FAC01

Process ID: 011 (EXEMPT)

SCC Desc: EXTERNAL COMBUSTION BOILERS - COMMERCIAL/INDUSTRIAL
COMMERCIAL/INSTITUTIONAL BOILER - DISTILLATE OIL
Grades 1 and 2 Oil

Fuel Type: NUMBER 2 OIL **Annual Thruput:** 0 **Thruput Units:** 1000 gallons burned

Process Description:

Space Heating

Control Equipment Description:

Provide control efficiency below with emissions summary

Operational Data:

----- Annual Average ----- Percent Fuel Use by Season ----- Jun - Aug ----- Jan, Feb, & Dec of 2008
Hrs/Day Days/Wk Wks/Yr Dec-Feb Mar-May Jun-Aug Sep-Nov Hrs/Day Days/Wk Total Days Hrs/Day Days/Wk Total Days

Process Contaminant Summary:

Providing fuel combustion emissions for the process listed above is OPTIONAL. REPORT EMISSIONS IF KNOWN.

Otherwise, federal emission factors will be used to calculate your emissions.

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
5	000630-08-0	CARBON MONOXIDE					
2	007446-09-5	SULFUR DIOXIDE					
7	0NY075-00-5	PM-10					
1	0NY075-10-0	UNSPECIATED PARTICULATES (EMISSION STATEMENT USE ONLY)					
3	0NY210-00-0	OXIDES OF NITROGEN					
4	0NY998-10-0	UNSPECIATED VOC (EMISSION STATEMENT USE ONLY)					

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 2.3 - Combustion and Incineration Process Emissions

Facility: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST. OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process Data

Emission Unit: U-FAC01

SCC: 1-05-001-06 SPACE HEATER:IND:NATURAL GAS

Process ID: E02 (EXEMPT)

SCC Desc: EXTERNAL COMBUSTION BOILERS - SPACE HEATERS
INDUSTRIAL SPACE HEATER
Natural Gas

Fuel Type: NATURAL GAS Annual Thruput: 1.356 Thruput Units: million cubic feet burned

Process Description:

Hot water heating system for garage area:

Control Equipment Description:

Provide control efficiency below with emissions summary

Operational Data:

Annual Average			Percent Fuel Use by Season				Jun - Aug			Jan, Feb, & Dec of 2008		
Hrs/Day	Days/Wk	Wks/Yr	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Hrs/Day	Days/Wk	Total Days	Hrs/Day	Days/Wk	Total Days
24	7	52	25%	25%	25%	25%	24	7	92	24	7	91

Process Contaminant Summary:

Providing fuel combustion emissions for the process listed above is OPTIONAL. REPORT EMISSIONS IF KNOWN.

Otherwise, federal emission factors will be used to calculate your emissions.

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
5	000630-08-0	CARBON MONOXIDE		113.91	3		AP-42
8	007439-92-1	LEAD					
2	007446-09-5	SULFUR DIOXIDE		0.81	3		
7	0NY075-00-5	PM-10		10.31	3		
11	0NY075-02-5	PM 2.5		10.31	3		"
1	0NY075-10-0	UNSPECIATED PARTICULATES (EMISSION STATEMENT USE ONLY)		10.31	3		
7	0NY075-10-5	UNSPECIATED PM-10 (EMISSION STATEMENT USE ONLY)		10.31	3		
3	0NY210-00-0	OXIDES OF NITROGEN		135.61	3		
4	0NY998-10-0	UNSPECIATED VOC (EMISSION STATEMENT USE ONLY)		7.46	3		

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement

Section 2.3 - Combustion and Incineration Process Emissions Blank Form

Owner: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process DataEmission Unit: NASCC: NAProcess ID: NA

SCC Desc:

Fuel Type: NAAnnual Thruput: NAThruput Units: NA

Process Description:

NA**Control Equipment Description:**

Provide control efficiency below with emissions summary

Emission Point Identifiers:

List all Emission Point(s) associated with the Emission Unit listed above

NA**Operational Data:**

Annual Average			Percent Fuel Use by Season				Jun - Aug			Jan, Feb, & Dec of 2008		
Hrs/Day	Days/Wk	Wks/Yr	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Hrs/Day	Days/Wk	Total Days	Hrs/Day	Days/Wk	Total Days
<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>

Process Contaminant Summary:

Providing fuel combustion emissions for the process listed above is OPTIONAL. REPORT EMISSIONS IF KNOWN.

Otherwise, federal emission factors will be used to calculate your emissions.

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
5	000630-08-0	CARBON MONOXIDE					
2	007446-09-5	SULFUR DIOXIDE					
7	0NY075-00-5	PM-10					
1	0NY075-10-0	UNSPECIATED PARTICULATES (EMISSION STATEMENT USE ONLY)		<u>NA</u>			
3	0NY210-00-0	OXIDES OF NITROGEN					
4	0NY998-10-0	UNSPECIATED VOC (EMISSION STATEMENT USE ONLY)					

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement

Section 3.1 - Industrial Process Emissions Summary

Facility: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Total Industrial Process Emissions by Contaminant

Enter the 2008 emissions total of each contaminant from this facility

Chem Family	CAS No.	Contaminant Name	Actual Emissions (Lbs/yr)
9	000071432	BENZENE	156.1
9	000091203	NAPHTHALENE	0.09
4	000095636	BENZENE, 1,2,4-TRIMETHYL-	5.23
9	000100414	ETHYLBENZENE	18.81
9	000108883	TOLUENE	221.49
9	000110543	HEXANE	288.12
9	000540841	PENTANE, 2,2,4-TRIMETHYL- (ISO-octane)	41.4
4	000560214	TRIMETHYL PENTANE, 2,2,3-	NA
9	001330207	XYLENE, M, O & P MIXT.	99.17
9	001634044	METHYL TERTBUTYL ETHER	93.85
	008006619	GASOLINE	NA
4	0NY998100	UNSPECIATED VOC (EMISSION STATEMENT USE ONLY)	52,085.11

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement

Section 3.2 - Industrial Process Emissions

Owner: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process Data

Emission Unit: U-00VRU

SCC: 4-04-002-50 MISCELL. LEAKS: LOADING RACKS

Process ID: VRU

SCC Desc: BULK TERMINALS/PLANTS
BULK PLANTS
Loading Racks

Annual Thruput: 311,587 Thruput Units: 1000 GALLONS TRANSFERRED

Process Description:

Process VRU in Emission Unit U-00VRU consists of the following:

1. Hydrocarbon vapor & air mixture is collected from truck.
2. Loading via tight connections made to the top of the trucks for both the product and vapor.
3. The vapor is carried in piping to the vapor condenser located on the Vapor Recovery Unit (Emission Source/Control 00010 & 0010C, respectively) skid. This Vapor Recovery Unit uses two carbon adsorption beds alternately (Emission Points 00001 & 00VRU) with a vacuum system employed to facilitate desorption.
4. Condensed liquid hydrocarbon collected at bottom of vapor condenser and returned to storage.

Control Equipment Description:

Provide control efficiency below with emissions summary

Emission Point Identifiers:

List all Emission Point(s) associated with the Emission Unit listed above

00001 00VRU

Operational Data:

Annual Average			Percent Operation by Season				Jun - Aug		
Hrs/Day	Days/Wk	Wks/Yr	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Hrs/Day	Days/Wk	Total Days
24	7	52	25%	25%	25%	25%	24	7	92

Process Contaminant Summary:

Provide actual emissions for process listed above

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
9	000071432	BENZENE		4.82	3		AP-42
9	000091203	NAPHTHALENE		3×10^{-4}	3		1
9	000100414	ETHYLBENZENE		4.76	3		1
9	000108883	TOLUENE		12.9	3		1
9	000110543	HEXANE		26.75	3		"
9	000540841	PENTANE, 2,2,4-TRIMETHYL- (ISO-Octane)		41.4	3		1
9	001330207	XYLENE, M, O & P MIXT.		28.54	3		1
9	001634044	METHYL TERTBUTYL ETHER		9.06	3		1

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 3.2 - Industrial Process Emissions

Company: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process Contaminant Summary:

Provide actual emissions for process listed above

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
4	0NY998100	UNSPECIATED VOC (EMISSION STATEMENT USE ONLY)		4888.5	3		AP-42

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 3.2 - Industrial Process Emissions

Owner: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process Data

Emission Unit: U-ADTNK

SCC: 4-07-999-97 MISCELLANEOUS

Process ID: ADT

SCC Desc: ORGANIC CHEMICAL STORAGE
ORGANIC CHEMICAL STORAGE - MISCELLANEOUS
Specify in Comments

Annual Thruput: 38,084 Thruput Units: 1000 GALLONS STORAGE CAPACITY

Process Description:

Process ADT in Emission Unit U-ADTNK is for the additive storage tanks. Four of these additive tanks (Tanks # 7, # 8, # 9 & # 10) are vertical tanks with cone fixed roofs. The other five tanks (Tanks # 51, # 52, # 54, # 55 & # 56) are horizontal tanks. Gasoline additive Tanks # 7, # 55, # 8, # 9, # 53, # 51, # 10, # 52 and # 54 correspond to Emission Points and Emission Source/Control 000XV, 000XX, 00XII, 00XIV, 00XIX, 00XVI, 0XIII, 0XVII and XVIII respectively. The emissions from these additive tanks are insignificant. The facility is willing to accept a federally enforceable limit of 526,900,000 gallons/year of gasoline throughput.

Fixed Roof Tanks (Additive + Distillate Tanks)

Control Equipment Description:

Provide control efficiency below with emissions summary

Emission Point Identifiers:

List all Emission Point(s) associated with the Emission Unit listed above

00XII 0XIII 00XIV 000XV 00XVI 0XVII XVIII 00XIX 000XX

Operational Data:

Annual Average			Percent Operation by Season				Jun - Aug		
Hrs/Day	Days/Wk	Wks/Yr	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Hrs/Day	Days/Wk	Total Days
24	7	52	25%	25%	25%	25%	24	7	92

Process Contaminant Summary:

Provide actual emissions for process listed above

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
9	000071432	BENZENE		4.09	8		TANKS 4.09d +
9	000091203	NAPHTHALENE		8.7×10^{-4}	8		DISTILLATE & ADDITIVE H/ SPECIATION
4	000095636	BENZENE, 1,2,4-TRIMETHYL-		0	8		
9	000100414	ETHYLBENZENE		1.15	8		
9	000108883	TOLUENE		3.88	8		
9	000110543	HEXANE		0.88	8		
9	000540841	PENTANE, 2,2,4-TRIMETHYL-		0	8		
9	001330207	XYLENE, M, O & P MIXT.		2.58	8		
9	001634044	METHYL TERTBUTYL ETHER		0	8		

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 3.2 - Industrial Process Emissions

Company: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process Contaminant Summary:

Provide actual emissions for process listed above

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
4	0NY998100	UNSPECIATED VOC (EMISSION STATEMENT USE ONLY)		245.69	8		TANKS 4-00d
							DISTILLATE &
							ADDITIVE HAI
							SPECIATION.

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 3.2 - Industrial Process Emissions

Owner: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process Data

Emission Unit: U-GTANK

SCC: 4-04-001-60 INT.FLOAT-PRI.SEAL;ST.LOSSES

Process ID: GDT

SCC Desc: BULK TERMINALS/PLANTS

BULK TERMINALS

INTERNAL FLOAT ROOF W/ PRIMARY SEAL-SPECIFY LIQUID:STANDING LOSS

Annual Thruput: 311,499 Thruput Units: 1000 GALLONS STORAGE CAPACITY**Process Description:**

Process GDT for gasoline/distillate in Emission unit U-GTANK consists of the following:

1. The control of vapor losses due to standing and working of storage tanks.

2. The internal floating roof tank compared with atmospheric pressure tanks achieves a high percent reduction of evaporation loss because the roof floats on the product and air space is almost completely eliminated.

There are ten (10) storage tanks of different volumes containing gasoline or petroleum distillates, Tanks # 41, # 42, # 43, # 44, # 45, # 46, # 47, # 48, # 49 and # 50. These gasoline or petroleum distillates storage tanks correspond to Emission Points and Emission Source/Control 0000V, 0001I,

Control Equipment Description:

Provide control efficiency below with emissions summary

Tanks 41, 42, 45 & 46 stored Ethanol in 2008

Tanks 43, 44, 47, 48, 49 & 50 stored Gasoline in 2008

Standing Losses of all Floating Roof Tanks

Emission Point Identifiers:

List all Emission Point(s) associated with the Emission Unit listed above

0000V 0000X 0001I 0001V 0001X 0001V 0001X 0001I 0001I 0001V 0001I

Operational Data:

Annual Average			Percent Operation by Season				Jun - Aug		
Hrs/Day	Days/Wk	Wks/Yr	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Hrs/Day	Days/Wk	Total Days
24	7	92	25%	25%	25%	25%	24	7	92

Process Contaminant Summary:

Provide actual emissions for process listed above

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
9	000071432	BENZENE		36.14	8		TANKS 4-09d +
9	000091203	NAPHTHALENE		0.02	8		GASOLINE &
4	000095636	BENZENE, 1,2,4-TRIMETHYL-		1.25	8		ETHANOL HAP SPECIATION
9	000100414	ETHYLBENZENE		3.14	8		
9	000108883	TOLUENE		50.03	8		
9	000110543	HEXANE		63.34	8		
9	000540841	PENTANE, 2,2,4-TRIMETHYL-		0	8		
9	001330207	XYLENE, M, O & P MIXT.		16.69	8		
9	001634044	METHYL TERTBUTYL ETHER		20.04	8		

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 3.2 - Industrial Process Emissions

Company: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process Contaminant Summary:

Provide actual emissions for process listed above

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
4	0NY998100	UNSPECIATED VOC (EMISSION STATEMENT USE ONLY)		11,641.27	8		TANKS 4-DAD
							GASOLINE
							ETHANOL HA
							SPECIATION

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 3.2 - Industrial Process Emissions Blank Form

Owner: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process DataEmission Unit: U-G TANKSCC: 4-04-001-18 BULK: IN FLOAT: RVP 13/10/7 WDProcess ID: E04SCC Desc: BULK TERMINALS / PLANTSBULK TERMINALSBULK TERM: INTERN FLOAT ROOF (PRI/SEC/SEAL): GAS RVP 13/10/7: WITHDRAWALAnnual Thruput: 311,499 Thruput Units: 1000 Gallons**Process Description:**

Working Losses from all Internal Floating Roof Tanks
Tanks 41, 42, 45 & 46 stored Ethanol in 2008
Tanks 43, 44, 47, 48, 49 & 50 stored Gasoline in 2008

Control Equipment Description:

Provide control efficiency below with emissions summary

Emission Point Identifiers:

List all Emission Point(s) associated with the Emission Unit listed above

Operational Data:

Annual Average			Percent Operation by Season				Jun - Aug		
Hrs/Day	Days/Wk	Wks/Yr	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Hrs/Day	Days/Wk	Total Days
24	7	52	25%	25%	25%	25%	24	7	92

Process Contaminant Summary:

Provide actual emissions for process listed above

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
9	000071432	Benzene		4.05	8		TANKS 4-0001+
9	000100614	Ethylbenzene		0.34	8		ETHANOL &
9	000108883	Toluene		5.39	8		GASOLINE RE- SPECIFICATION
9	000110543	Hexane		6.8	8		
9	000540841	Pentane, 2,2,4 Trimethyl		0	8		
9	001330207	Xylene, m o & p mixt		1.8	8		
9	001634044	Methyl Tetra Butyl ether		2.04	8		
4	001998100	Unspeciated VOC		1362.84	8		
9	91-20-3	Naphthalene		0.002	8		
9	95-63-6	1,2,4 Trimethylbenzene		0.13	8		

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 3.2 - Industrial Process Emissions Blank Form

C : MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process Data

Emission Unit: V-ADTNK

SCC: 4-07-999-98 MISCELLANEOUS

Process ID: E03

SCC Desc: ORGANIC CHEMICAL STORAGE
ORGANIC CHEMICAL STORAGE - MISCELLANEOUS
Specify in comments.

Annual Thruput: _____ **Thruput Units:** 1000 Gallons Transferred

Process Description:

Additive storage tanks, four of these (7, 8, 9 & 10) are vertical tanks with cone fixed roofs. The other six tanks (51, 52, 53, 54, 55 & 56) are horizontal tanks. Emissions from these additive tanks are insignificant.

Emissions have been reported under Process ID: ADT

Control Equipment Description:

Provide control efficiency below with emissions summary

Emission Point Identifiers:

List all Emission Point(s) associated with the Emission Unit listed above

Operational Data:

Annual Average			Percent Operation by Season				Jun - Aug		
Hrs/Day	Days/Wk	Wks/Yr	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Hrs/Day	Days/Wk	Total Days

Process Contaminant Summary:

Provide actual emissions for process listed above

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 3.2 - Industrial Process Emissions Blank Form

Facility: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
26 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process DataEmission Unit: U-00001Process ID: E05SCC: A-04-001-51 MISC LOSSES - VALV. FLAG PUMPSCC Desc: BULK TERMINALS / PLANTSBULK TERMINALS - VALVES, FLANGES, PUMPSAnnual Thruput: 311,587 Thruput Units: 1000 Gallons**Process Description:**Process Fugitives**Control Equipment Description:**

Provide control efficiency below with emissions summary

Emission Point Identifiers:

List all Emission Point(s) associated with the Emission Unit listed above

Operational Data:

Annual Average			Percent Operation by Season				Jun - Aug		
Hrs/Day	Days/Wk	Wks/Yr	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Hrs/Day	Days/Wk	Total Days
24	7	52	25%	25%	25%	25%	24	7	92

Process Contaminant Summary:

Provide actual emissions for process listed above

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
9	000071432	Benzene		6.97	3		AP-42
9	000100414	Ethylbenzene		0.62	3		
9	000108813	Toluene		9.85	3		
9	00010543	Hexane		12.49	3		
9	000540841	Pentane, 224 Trimethyl		0	3		
9	001330207	Xylene m & p mixt		3.28	3		
9	001634044	Methyl Tetra Butyl Ether		4.06	3		
4	001998100	Unspecified VOC		2192.37	3		
9	91-20-3	Naphthalene (Emission statement only)		4.5 x 10 ⁻³	3		
9	95-63-6	1,2,4 Trimethylbenzene		0.25	3		

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement
Section 3.2 - Industrial Process Emissions Blank Form

Facility: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process DataEmission Unit: V-00001Process ID: EDSCC: 4-04-001-54 TANK TRUCK VAPOR LEAKS

SCC Desc: BULK TERMINAL PLANTS
BULK TERMINALS
TANK TRUCK LEAKS

Annual Thruput: 311,587 Thruput Units: 1000 Gallons

Process Description:

MACT LOADING LOSSES
LOADING RACK FUGITIVES

Control Equipment Description:

Provide control efficiency below with emissions summary

Emission Point Identifiers:

List all Emission Point(s) associated with the Emission Unit listed above.

0001**Operational Data:**

Annual Average			Percent Operation by Season				Jun - Aug		
Hrs/Day	Days/Wk	Wks/Yr	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Hrs/Day	Days/Wk	Total Days
<u>24</u>	<u>7</u>	<u>52</u>	<u>25%</u>	<u>25%</u>	<u>25%</u>	<u>25%</u>	<u>24</u>	<u>7</u>	<u>92</u>

Process Contaminant Summary:

Provide actual emissions for process listed above

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
9	000071432	Benzene		100.023	3		AP-42
9	000106414	Ethylbenzene		8.8	3		
9	000108823	Toluene		139.43	3		
9	000110943	Hexane		177.85	3		
9	000540841	Pentane 2,2,4 trimethyl		0	3		
9	001330207	xylene m o & p mixt		46.28	3		
9	01634044	methyl Tetra Butyl ether		58.65	3		
4	0NY998100	Unspecified VOC (Emission statement use only)		31,747	3		
9	91-20-3	naphthalene		0.06	3		
7	95-63-6	1,2,4 trimethylbenzene		3.58	3		

New York State Department of Environmental Conservation
Division of Air Resources
2008 Emission Statement

Section 4 - Periodic Inventory Blank Reporting Form

Facility: MOTIVA ENTERPRISES LLC
910 LOUISIANA ST OSP 2543
HOUSTON, TX 77002

Facility: MOTIVA ENTERPRISES LLC
25 PAIDGE AVE
BROOKLYN, NY 11222

DARID: 610000GT07

Primary SIC: 5171

DECID: 2610100105

Process Data

NA

SCC:

Annual Thruput: NA

SCC Desc:

NA

Thruput Units: NA

Operational Data:

Annual Average			Percent Operation by Season				Jun - Aug		
Hrs/Day	Days/Wk	Wks/Yr	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Hrs/Day	Days/Wk	Total Days
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Process Contaminant Summary:

Provide actual emissions for process listed above

Chem Family	CAS No.	Contaminant Name	Control Efficiency (%)	Actual (Lbs/yr)	HD	Emission Factor	Source
	000630-08-0	CARBON MONOXIDE					
3	0NY210-00-0	OXIDES OF NITROGEN		NA			
4	0NY998-10-0	UNSPECIATED VOC (EMISSION STATEMENT USE ONLY)					

DOCUMENT INFO

17

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37

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DocID: 00000313

Filename: 58603-2009-02-12-COR-01 (Notice of
Violation SPDES - NYSDEC).pdf

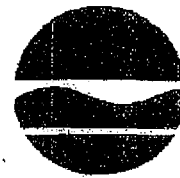
New York State Department of Environmental Conservation

Division of Water, Region 2

47-40 21ST Street, Long Island City, NY 11101-5407

Phone: (718) 482-4933 • FAX: (718) 482-6516

Website: www.dec.ny.gov



Alexander B. Grannis
Commissioner

CERTIFIED MAIL NO. 7005 0390 0004 3765 4375 WITH RETURN RECEIPT REQUESTED

February 12, 2009

Mr. Frank Signoriello, Terminal Supervisor
Motiva Enterprises LLC
25 Paidge Avenue
Brooklyn, NY 11222

**RE: NOTICE OF VIOLATION
SPDES Permit No. NY 0006131
Annual Compliance Inspection**

Dear Mr. Signoriello:

On February 11, 2009 the referenced facility was inspected for the purpose of evaluating its compliance with the requirements of its permit issued under the State Pollution Discharge Elimination System (SPDES) and Article 17 of the Environmental Conservation Law.

The following items were noted during the inspection:

- A review of the facility's discharge monitoring reports for Benzene, Toluene, Ethylbenzene, and Xylenes from the period January 2007 to December 2008 indicated the following:

Outfall	Parameter	Reported Value	Action Level	Period
001	Ethylbenzene	0.17 mg/l	0.1 mg/l	2/07 to 4/07
	Toluene	1.1 mg/l	0.1 mg/l	2/07 to 4/07
	Xylenes	0.92 mg/l	0.1 mg/l	2/07 to 4/07
001	Benzene	1.0 mg/l (6/28/07); 0.19 mg/l (7/18/07)	0.1 mg/l	5/07 to 7/07
	Ethylbenzene	0.44 mg/l (6/28/07); 0.29 mg/l (6/27/07); 0.23 mg/l (7/18/07)	0.1 mg/l	5/07 to 7/07
	Toluene	6.7 mg/l (6/28/07); 0.76 mg/l (6/27/07); 2.1 mg/l (7/18/07)	0.1 mg/l	5/07 to 7/07
	Xylenes	3.7 mg/l (6/28/07); 0.66 mg/l (6/27/07); 1.18 mg/l (7/18/07)	0.1 mg/l	5/07 to 7/07

Outfall	Parameter	Reported Value	Action Level	Period
001	Toluene	0.56 mg/l (11/6/07); 0.12 mg/l (11/20/07)	0.1 mg/l	11/07 to 1/08
	Xylenes	0.35 mg/l (11/6/07)	0.1 mg/l	11/07 to 1/08
001	Toluene	0.33 mg/l (6/5/08)	0.1 mg/l	5/08 to 7/08
	Xylenes	0.36 mg/l (6/5/08)	0.1 mg/l	5/08 to 7/08

The facility's SPDES permit page 3 of 9 states "If levels higher than the actions levels are confirmed the results shall constitute an application for permit modification and the permit may be reopened for consideration of revised action levels or effluent limits."

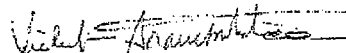
Based on the results shown above, the Benzene, Toluene, Ethylbenzene, Xylenes levels higher than the action levels of 0.1 mg/l are confirmed. The Department shall proceed with the facility permit modification. In the interim, in order to prevent the discharge of Benzene, Toluene, Ethylbenzene, Xylenes levels higher than the action levels of 0.1 mg/l which may cause or contribute to a violation of water quality standards, the Department requests that a Comprehensive Corrective Action Plan be submitted to this office for review and approval by March 31, 2009. The plan must include a proposed schedule for implementation of the recommended corrective action.

- The facility still has not rectified the problem of using the unapproved method to analyze Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX). The BTEX hydrostatic test samples collected on October 16, 2006 were analyzed by the method SW 846 8260. NYSDEC had already informed the facility twice in the compliance inspection reports (first notification: September 12, 2005 (Mr. Mario A. D' Antonio); second notification: June 6, 2006 (Mr. E.D. Bernhard Jr.)) that the method SW 846 8260 is unapproved method and it is not authorized under the 40 Code of Federal Regulations (CFR) Part 136. Please inform the laboratory that the approved method for BTEX analysis under 40 CFR Part 136 is EPA method number 624.
- The facility Best Management Practices (BMP) Plan needs to be updated to reflect the recent changes at the facility.

The Department reserves its right to initiate an enforcement actions for the items noted in this Notice of Violation.

If you have any further questions, please contact me at (718) 482 4946.

Very truly yours,



Vichit Aramsombatdee, PE
Environmental Engineer 2
Region 2, Division of Water

cc: Robert Elburn, PE, Regional Water Engineer;
Selvin Southwell, PE, Deputy Regional Water Engineer

DOCUMENT INFO

18

DocID: 00000421

Filename: 58603-2010-08-30-OTH-01 (Truck Rack
and Additive Tanks Containment Volume
Calculations - RPMS).pdf

MOTIVA ENTERPRISES LLC

BROOKLYN TERMINAL
BROOKLYN, NEW YORK

TRUCK LOADING RACK AND ADDITIVE TANKS 51 & 54 CONTAINMENT AREAS

CONTAINMENT VOLUME CALCULATIONS

PREPARED BY:

RPMS

CONSULTING ENGINEERS

1 ROSSMOOR DRIVE
MONROE TWP., NEW JERSEY 08831

RPMS PROJECT NO. 4844

AUGUST 2010

ADDITIVE TANKS CONTAINMENT

TANK 54 - 3,000 Gal. Vertical Tank

Dimensions: $D_{54} := 8.00$ ft $H := 13.33$ ft

Tank Volume: $V_{54} := 3000$ Gal.

TANK 51 - 5,000 Gal. Horizontal Tank

Dimensions: $D_{51} := 8.00$ ft $L := 14.50$ ft

Tank Volume: $V_{51} := 5000$ Gal.

Check Dike Containment For 110% of the Largest Tank Capacity

Containment Dike Dimensions

Dimensions: $B_c := 12.00$ ft

$L_c := 32.67$ ft

$H_c := 5.33$ ft

Containment Capacity

Gross Area: $A_g := B_c \cdot L_c$

$A_g = 392.04$ ft²

Area Displaced by Tank 54: $A_{54} := \frac{\pi \cdot D_{54}^2}{4}$ $A_{54} = 6.28$ ft²

Net Area: $A_{\text{net}} := A_g - A_{54}$ $A_{\text{net}} = 385.76$ ft²

Total Dike Containment: $V_c := A_{\text{net}} \cdot H_c \cdot 7.48$

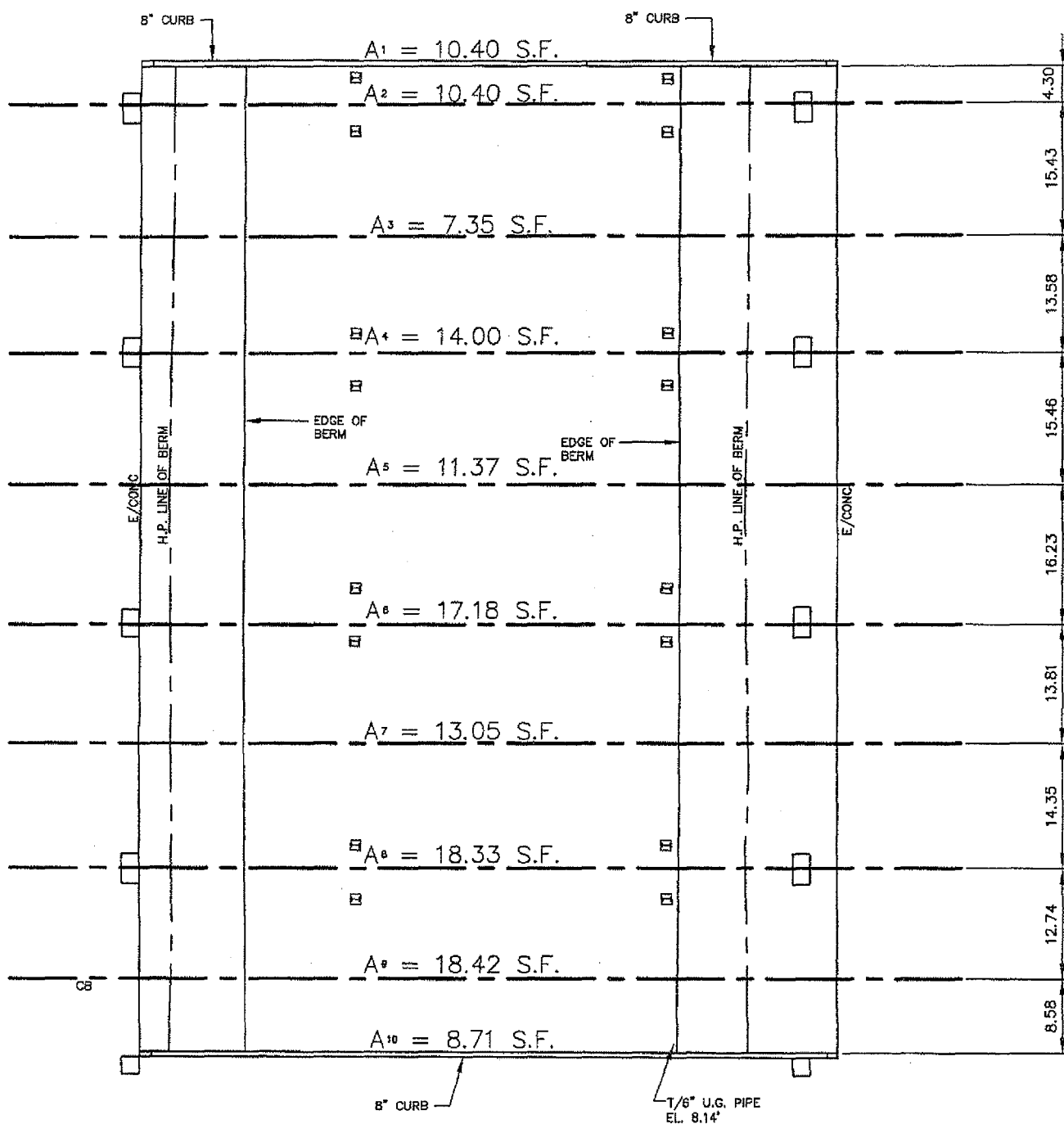
$V_c = 15379.51$ Gal.

Containment Volume Required

$V_R := 1.10 \cdot V_{51}$ $V_R = 5500.00$ Gal.

$V_c \gg V_R \Rightarrow \text{OK}$

Containment capacity exceeds by far the required capacity



TRUCK LOADING RACK

A = DENOTES AREA ACROSS PLANE WITH
RESPECT TO CONTROL ELEVATION 10.00'

TOTAL CONTAINMENT VOLUME = 1,539 S.F. = 11,510 GAL.

Plane	Area (ft ²)	Dist. Between Planes (ft)	Volume (ft ³)
A ₁	10.40		
		4.30	44.72
A ₂	10.40		
		15.43	136.94
A ₃	7.35		
		13.58	144.97
A ₄	14.00		
		15.46	196.11
A ₅	11.37		
		16.23	231.68
A ₆	17.18		
		13.81	208.74
A ₇	13.05		
		14.35	225.15
A ₈	18.33		
		12.74	234.10
A ₉	18.42		
		8.58	116.39
A ₁₀	8.71		
Total =			1,539 ft ³ 11,510 Gal.

GAUGE HEIGHT 14'-5 3/4" LOCATED 1'-0" IN FROM TANK SHELL TO RIM OPPOSITE HINGE.

FT. IN.	GALLONS	FT. IN.	GALLONS	FT. IN.	GALLONS
0	21	6	2,280	12	4,544
1	50	7	2,312	13	4,676
2	81	8	2,343	14	4,807
3	112	9	2,374	15	4,938
4	144	10	2,405	16	5,069
5	175	11	2,437	17	5,201
6	206	12	2,468	18	5,332

SAFE FILL ← SAFE FILL

INCH	GALLONS
0	21
1/8	25
1/4	28
3/8	32
1/2	36
5/8	40
3/4	44
7/8	48

Shell Additive
ALPHA TANK COMPANY INC.

Tanks For All Purposes - General Steel Plate Construction

1850 STEINWAY ST. - LONG ISLAND CITY, N. Y. 11105

Phone: 718 274-8700

TANK #51

NEW YORK CITY

5,000 GALLONS, 96" DIA. X 14'-6" LONG FUEL TANK

GAUGE MEASUREMENT CHART

INCHES	GALLONS	INCHES	GALLONS	INCHES	GALLONS
1	9	33	1,522	65	3,605
2	25	34	1,585	66	3,667
3	47	35	1,649	67	3,727
4	72	36	1,713	68	3,788
5	100	37	1,778	69	3,848
6	130	38	1,842	70	3,907
7	163	39	1,907	71	3,966
8	199	40	1,973	72	4,024
9	237	41	2,038	73	4,081
10	277	42	2,104	74	4,137
11	318	43	2,170	75	4,192
12	381	44	2,236	76	4,247
13	405	45	2,302	77	4,300
14	451	46	2,368	78	4,352
15	499	47	2,435	79	4,404
16	548	48	2,501	80	4,454
17	598	49	2,567	81-6'-9"	4,502 Safe Fill
18	649	50	2,633	82	4,550
19	701	51	2,700	83	4,596
20	755	52	2,761	84	4,641
21	810	53	2,832	85	4,684
22	864	54	2,898	86	4,725
23	921	55	2,963	87	4,765
24	978	56	3,029	88	4,802
25	1,035	57	3,094	89	4,838
26	1,094	58	3,160	90	4,871
27	1,153	59	3,224	91	4,902
28	1,213	60	3,288	92	4,930
29	1,274	61	3,352	93	4,955
30	1,335	62	3,416	94	4,977
31	1,397	63	3,480	95	4,993
32	1,460	64	3,542	96	5,002

SAYBOLT INC.

U. S. Headquarters
400 Swenson Drive
Kenilworth, NJ 07033

MOTIVA ENTERPRISES LLC.
BROOKLYN, NY

TANK NO. 54
INNAGE TABLE

GAUGE HEIGHT 14'-5 3/4" LOCATED 1'-0" IN FROM TANK SHELL TO RIM OPPOSITE HINGE.

FT. IN.	GALLONS	FT. IN.	GALLONS	FT. IN.	GALLONS
0	21	5	2,280	12	4,544
1	50	1	2,312	1	4,575
2	81	2	2,343	2	4,607
3	112	3	2,374	3	4,638
4	144	4	2,406	4	4,670
5	176	5	2,437	5	4,701
6	206	6	2,468	6	4,733
7	237	7	2,500	7	4,764
8	268	8	2,531	8	4,796
9	300	9	2,562	9	4,827
10	331	10	2,593	10	4,859
11	362	11	2,625	11	4,890
1	394	7	2,656	12	4,922
2	425	1	2,687	1	4,953
3	456	2	2,719		
4	488	3	2,750		
5	521	4	2,781		
6	553	5	2,813		
7	585	6	2,844		
8	617	7	2,875		
9	648	8	2,906		
10	680	9	2,938		
11	711	10	2,969		
12	743	11	3,000		
1	774	8	3,032		
2	805	1	3,063		
3	837	2	3,095		
4	869	3	3,126		
5	901	4	3,158		
6	933	5	3,189		
7	964	6	3,221		
8	996	7	3,252		
9	1,028	8	3,284		
10	1,060	9	3,315		
11	1,091	10	3,347		
12	1,123	11	3,378		
1	1,154	9	3,410		
2	1,186	1	3,441		
3	1,217	2	3,473		
4	1,248	3	3,504		
5	1,279	4	3,535		
6	1,311	5	3,567		
7	1,342	6	3,599		
8	1,373	7	3,630		
9	1,404	8	3,662		
10	1,436	9	3,693		
11	1,467	10	3,725		
12	1,498	11	3,756		
1	1,530	10	3,788		
2	1,561	1	3,819		
3	1,592	2	3,851		
4	1,623	3	3,882		
5	1,655	4	3,914		
6	1,686	5	3,945		
7	1,717	6	3,977		
8	1,749	7	4,008		
9	1,780	8	4,040		
10	1,811	9	4,071		
11	1,842	10	4,103		
12	1,874	11	4,134		
1	1,905	11	4,166		
2	1,936	1	4,197		
3	1,968	2	4,229		
4	1,999	3	4,260		
5	2,030	4	4,292		
6	2,061	5	4,323		
7	2,093	6	4,355		
8	2,124	7	4,386		
9	2,155	8	4,418		
10	2,187	9	4,449		
11	2,218	10	4,481		
12	2,249	11	4,512		

SAFE FILL ← SAFE FILL

Mobil
Additive

INCH	GALLONS
0	21
1/8	25
1/4	28
3/8	32
1/2	36
5/8	39
3/4	43
7/8	46
1	50

FRACTIONS	
1/16	2
1/8	4
3/16	6
1/4	8
5/16	10
3/8	12
7/16	14
1/2	16
9/16	18
5/8	20
11/16	22
3/4	24
13/16	25
7/8	27
15/16	28
1	31

1. TANK SHELL HEIGHT: 13'-4"
2. DIAMETER: 8'-0"
3. 0'-2" CROWNED UP BOTTOM SIGHTED.
4. LIQUID HEAD STRESS APPLIED AT 25.0 API
5. TANK SHELL COMPUTED AT 60" F.

6. 0'-0" REPRESENTS VOLUME BELOW STRIKE POINT.
7. TABLE COMPUTED AS PER API MPMS CHAPTER 2.2A
8. FRACTIONS NOT APPLICABLE BELOW 0'-1"
9. SAFEFILL: 12'-0"

CHART IS CERTIFIED FOR THIS TANK ONLY.
COMPUTED BY: JF 09/26/02
STRAPPED BY: JPY & BK 09/25/02

SAYBOLT LP

O. Enders

THIS TABLE SUPERSEDES ALL TABLES ISSUED PRIOR TO 09/02

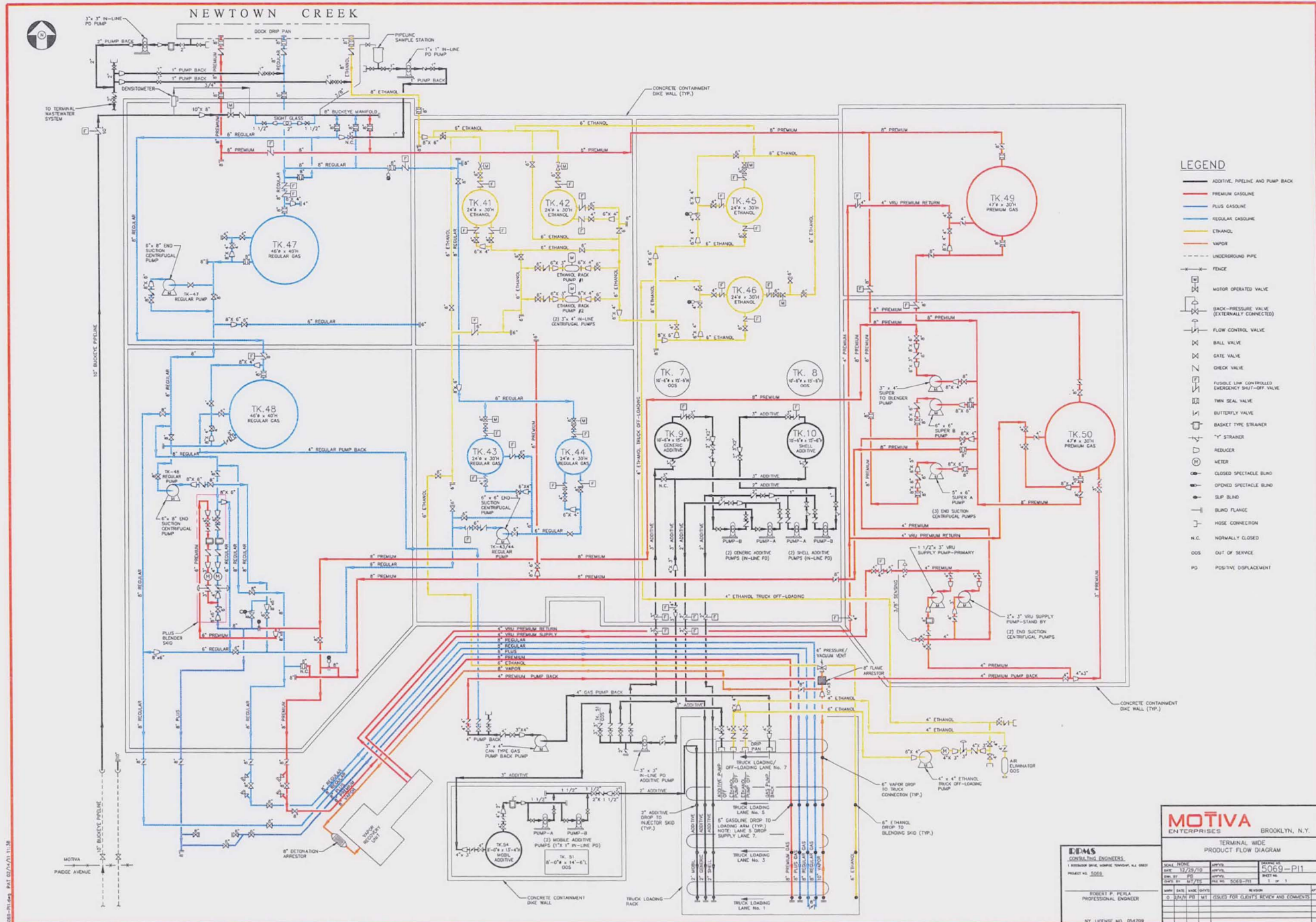
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MOTIVA ENTERPRISES.

06/24/2010 10:00 FAX 718 383 7970

Shell/Motiva 0008411

Product Flow Diagram



MSDS's

MATERIAL SAFETY DATA SHEET

Review Date: 01/04/2006

SECTION 1

PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: Denatured Ethanol

MSDS NUMBER: 5708MU - 2

PRODUCT CODE(S): 02704, 05482

MANUFACTURER

Motiva Enterprises LLC

P.O. Box 4540

Houston, TX. 77210-4540

TELEPHONE NUMBERS

Spill Information: (877) 242-7400

Health Information: (877) 504-9351

MSDS Assistance Number: (877) 276-7285

SECTION 2

PRODUCT/INGREDIENTS

INGREDIENTS

INGREDIENTS	CAS#	CONCENTRATION
Denatured Ethanol	Mixture	100 %weight
Ethanol	64-17-5	95 - 98 %weight
Unleaded Gasoline	Mixture	2 - 5 %weight
Toluene	108-88-3	0 - 1.5 %weight
Xylene, mixed isomers	1330-20-7	0 - 1.5 %weight
Benzene	71-43-2	0 - 0.25 %weight
Ethyl Benzene	100-41-4	0 - 0.27 %weight
Miscellaneous Hydrocarbons		0 - 2.5 %weight

NOTE: Content of Gasoline components will vary; Individual components may be present from trace amounts up to the maximum shown.

SECTION 3

HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance & Odor: Clear liquid. Alcohol odor.

Health Hazards: Causes severe eye irritation. May be harmful or fatal if swallowed. Do not induce vomiting. May cause aspiration pneumonitis. May cause CNS depression.

Physical Hazards: Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

Hazard Rating: Least - 0 Slight - 1 Moderate - 2 High - 3 Extreme - 4

Inhalation:

In applications where vapors (caused by high temperature) or mists (caused by mixing or spraying) are created, breathing

may cause a mild burning sensation in the nose, throat and lungs. Breathing of high vapor concentrations may cause CNS depression, evidenced by dizziness, light-headedness, headache, nausea, drowsiness, and loss of coordination. Continued inhalation may result in unconsciousness.

Eye Irritation:

Severely irritating to the eyes causing pain, redness, swelling and blurred vision.

Skin Contact:

Prolonged or repeated skin contact can cause defatting and drying of the skin which may result in a burning sensation and a dried, cracked appearance.

Ingestion:

This material may be harmful or fatal if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Generally considered to have a low order of acute oral toxicity.

Other Health Effects:

Carcinogenic in animal tests. Known human carcinogen. See Section 11. Material is suspected of causing cancer in laboratory animals. See Section 11. Material may cause birth defects and/or miscarriages. See Section 11. Refer to Section 11, Toxicological Information, for specific information on the following effects:
Developmental Toxicity, Genotoxicity

Primary Target Organs:

The following organs and/or organ systems may be damaged by overexposure to this material and/or its components:
Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver

Signs and Symptoms:

Irritation as noted above. Aspiration pneumonitis may be evidenced by coughing, labored breathing and cyanosis (bluish skin); in severe cases death may occur. Damage to blood-forming organs may be evidenced by: a) easy fatigability and pallor (RBC effect), b) decreased resistance to infection (WBC effect), c) excessive bruising and bleeding (platelet effect). Kidney damage may be indicated by changes in urine output or appearance, pain upon urination or in the lower back or general edema (swelling from fluid retention). Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye color), fatigue and sometimes pain and swelling in the upper right abdomen.

For additional health information, refer to section 11.

SECTION 4

FIRST AID MEASURES

Inhalation:

Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin:

Flush exposed area with water and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye:

Immediately flush eyes with large amounts of water for at least 30 minutes, by the clock, while holding eyelids open. Transport to nearest medical facility for additional treatment.

Ingestion:

DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth.

Note to Physician:

If more than 2.0ml/kg body weight has been ingested and vomiting has not occurred, emesis should be induced with supervision. Keep victim's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions, or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

SECTION 5**FIRE FIGHTING MEASURES**

Flash Point [Method]: <10 °F/-12.22 °C [Approximate Setaflash Closed Cup]

Flammability in Air: 1.3%V - 7.6 %volume

Extinguishing Media:

Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

Fire Fighting Instructions:

DANGER! EXTREMELY FLAMMABLE. Clear fire area of all non-emergency personnel. Only enter confined fire space with full bunker gear, including a positive pressure, NIOSH-approved, self-contained breathing apparatus. Cool surrounding equipment, fire-exposed containers and structures with water. Container areas exposed to direct flame contact should be cooled with large quantities of water (500 gallons water per minute flame impingement exposure) to prevent weakening of container structure.

Unusual Fire Hazards:

Vapors are heavier than air accumulating in low areas and traveling along the ground away from the handling site. Do not weld, heat or drill on or near container. However, if emergency situations require drilling, only trained emergency personnel should drill.

SECTION 6**ACCIDENTAL RELEASE MEASURES****Protective Measures:**

DANGER! EXTREMELY FLAMMABLE! Eliminate potential sources of ignition. Handling equipment must be bonded and grounded to prevent sparking.

Spill Management:

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

Reporting:

U.S. regulations require reporting releases of this material to the environment which exceed the reportable quantity to the National Response Center at (800)424-8802.

SECTION 7**HANDLING AND STORAGE****Precautionary Measures:**

Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet. Launder contaminated clothing before reuse. Properly dispose of contaminated leather articles such as shoes or belts that cannot be decontaminated. Avoid heat, open flames, including pilot lights, and strong oxidizing agents. Use explosion-proof ventilation to prevent vapor accumulation. Ground all handling equipment to prevent sparking. Do not siphon gasoline by mouth; harmful or fatal if swallowed. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

For use as a motor fuel only. Do not use as a cleaning solvent or for other non-motor fuel uses.

Handling:

Surfaces that are sufficiently hot may ignite liquid material. Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

Keep containers closed when not in use. **WARNING!** The flow of gasoline through the pump nozzle can produce static electricity, which may cause a fire if gasoline is pumped into an ungrounded container. To avoid static buildup, place approved container on the ground. Do not fill container in vehicle or truck bed. Keep nozzle in contact with container while filling. Do not use automatic pump handle (latch-open) device. Keep all storage vessels closed. Material will ignite when exposed to air. Air trapped within the storage container may be removed by placing dry ice in the container prior to closing. Turn off all battery operated portable electronic devices (examples include: cellular phones, pagers and CD players) before operating gasoline pump. Use only with adequate ventilation.

Storage:

Do not store in open or unlabeled containers. Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures.

Keep liquid and vapor away from heat, sparks and flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors have dissipated. Use explosion-proof ventilation indoors and in laboratory settings.

Container Warnings:

Keep containers closed when not in use. Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

SECTION 8**EXPOSURE CONTROLS/PERSONAL PROTECTION**

Chemical	Limit	TWA	STEL	Ceiling	Notation
Benzene	ACGIH TLV	0.5 ppmv	2.5 ppmv		Skin
Benzene	OSHA PEL	1 ppmv	5 ppmv		
Ethanol	ACGIH TLV	1000 ppmv			
Ethyl Alcohol	OSHA PEL	1000 ppmv			
Gasoline	ACGIH TLV	300 ppmv	500 ppmv		
Gasoline	OSHA PEL - 1989(revoked)	300 ppmv	500 ppmv		
Toluene	ACGIH TLV	50 ppmv			Skin
Toluene	OSHA PEL	200 ppmv		300 ppmv	
Toluene	OSHA PEL - 1989(revoked)	100 ppmv	150 ppmv		
Toluene	SHELL	50 ppmv			

	INTERNAL				
xylene (o-, m-, p- isomers)	OSHA PEL	100 ppmv			
xylene (o-, m-, p- isomers)	OSHA PEL - 1989(revoked)	100 ppmv	150 ppmv		
Xylene (o-, m-, p-isomers)	ACGIH TLV	100 ppmv	150 ppmv		

Decomposition Product	Limit	TWA	STEL	Ceiling	Notation
Carbon dioxide	ACGIH - TLV	5000 ppmm	30000 ppmm		
Carbon dioxide	OSHA - PEL		30000 ppmm		
Carbon dioxide	OSHA - PEL_IS	10000 ppmm			
Carbon monoxide	OSHA - PEL	35 ppmv		200 ppmv	

Decomposition Product	Method	Condition
Carbon dioxide	Combustion	
Carbon monoxide	Combustion	

Exposure Controls

Provide adequate ventilation to control airborne concentrations below the exposure guidelines/limits.

Personal Protection

Personal protective equipment (PPE) selections vary based on potential exposure conditions such as handling practices, concentration and ventilation. Information on the selection of eye, skin and respiratory protection for use with this material is provided below.

Eye Protection:

Chemical Goggles - If liquid contact is likely., or Safety glasses with side shields

Skin Protection:

Use protective clothing which is chemically resistant to this material. Selection of protective clothing depends on potential exposure conditions and may include gloves, boots, suits and other items. The selection(s) should take into account such factors as job task, type of exposure and durability requirements.

Published literature, test data and/or glove and clothing manufacturers indicate the best protection is provided by:
Neoprene, or Nitrile Rubber

Respiratory Protection:

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Types of respirator(s) to be considered in the selection process include:

For Vapors: Air Purifying, R or P style prefilter & organic cartridge, NIOSH approved respirator. Full face air supplied respirator if oxygen level is reduced below 19.5 %. Self-contained breathing apparatus for use in environments with unknown concentrations or emergency situations.

SECTION 9	PHYSICAL AND CHEMICAL PROPERTIES
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Appearance & Odor: Clear liquid. Alcohol odor.

Substance Chemical Family: Alcohol

Boiling Point	173 °F Approximate	Flammability in Air	1.3 %volume - 7.6 %volume
Flash Point	< 10 °F Approximate [Setaflash Closed Cup]	Specific Gravity	0.79
Stability	Stable	Vapor Density	> 1
Viscosity	< 1.4 cSt @ 100 °F		

SECTION 10	REACTIVITY AND STABILITY
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Stability:

Material is stable under normal conditions.

Conditions to Avoid:

Avoid heat, sparks, open flames and other ignition sources.

Materials to Avoid:

Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products:

Thermal decomposition products are highly dependent on combustion conditions. A complex mixture of airborne solids, liquids and gases will evolve when this material undergoes pyrolysis or combustion. Aldehydes, Carbon Monoxide, Carbon Dioxide, Unidentified organic compounds, Peroxide, Styrene oxide and other unidentified organic compounds may be formed upon combustion.

SECTION 11	TOXICOLOGICAL INFORMATION
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Acute Toxicity

TEST	Result	OSHA Classification	Material Tested
Dermal LD50	>2 g/kg(Rabbit)	Non-Toxic	Based on components(s)
Eye Irritation	Variable [Rabbit]	Irritating	Based on components(s)
Inhalation LC50	>16,000 ppmv(Rat)	Non-Toxic	Based on components(s)
Oral LD50	>5 ml/kg(Rat)	Non-Toxic	Based on components(s)

Carcinogenicity:

Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant.

Carcinogenicity Classification

Chemical Name	NTP	IARC	ACGIH	OSHA
Denatured Ethanol	No	Yes	No	No
Benzene	Yes	Carcinogen (1)	A1	Yes
Ethyl Benzene	No	Possible Carcinogen (2B)	A3	No
Toluene	No	Not Classifiable (3)	A4	No
Unleaded Gasoline	No	Possible Carcinogen (2B)	A3	No

Carcinogenicity	Chronic inhalation of wholly vaporized gasoline produced kidney tumors in male rats and liver tumors in female mice. The kidney tumors have been shown to develop through a unique mechanism involving Alpha-2u globulin. This protein is not present in humans making the kidney tumors irrelevant to potential human health risks. Origin of the female mouse liver tumors is less understood, leaving their significance for human risks uncertain. Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs, is associated with anemia (depletion of blood cells) and is linked to the later development of acute myelogenous leukemia (AML) in humans. A recent chronic bioassay of ethylbenzene by the NTP produced clear evidence of carcinogenicity in male rats based on kidney tumor increase. Other animal tumors possibly associated with ethylbenzene include testicular adenomas in male rats, kidney tumors in female rats, lung tumors in male mice and liver tumors in female mice. Toluene is not known to be mutagenic or carcinogenic although available human and experimental animal data are limited and insufficient to assess carcinogenic potential.
Cardiovascular System	While there is no evidence that workplace exposure to acceptable levels of toluene vapors (e.g., the TLV) have produced cardiac effects in humans, high concentrations may cause cardiac sensitization and sudden lethality has been reported from habitual sniffing of solvents or glue. Animal studies have confirmed the sensitizing effects. Sensitization may lead to fatal changes in heart rhythms. Hypoxia or injection of adrenalin-like agents may enhance this effect. Thickening of heart blood vessels has been reported in animals exposed to xylene.
Developmental Toxicity	Daily exposure of pregnant rats to unleaded gasoline vapor at concentrations up to 9000 ppm resulted in no detectable maternal or developmental toxicity. Developmental toxicity studies of xylenes showed embryo/lethal/toxic and teratogenic effects with maternal toxicity. Many case studies involving abuse during pregnancy implicate toluene as a developmental toxicant. Studies in laboratory animals have shown developmental effects comparable to those reported in humans, but the effects were generally associated with maternal toxicity. Ethanol ingestion during pregnancy has been reported to cause birth defects in some infants.
Genotoxicity	Unleaded gasoline was tested for genetic activity in tests using microbial cells, cultured mammalian cells and rats (bone marrow) and was judged to be negative in every case. Toluene was negative in the Ames assay and negative for chromosomal aberrations and sister-chromatid exchanges in human lymphocytes and in an in vitro test using hamster cells. Mouse lymphoma test results for toluene were inconclusive.
Blood/Blood Forming Organs	Blood effects were seen in rats following prolonged and repeated oral exposure to a mixture of xylenes containing ethylbenzene.
Kidney	Long-term inhalation of wholly vaporized gasoline caused increased kidney weight and

	progressive nephropathy (tissue damage) in male rats. In rats exposed orally to a xylene mixture also containing ethylbenzene, males developed hyaline droplet changes and females showed evidence of early chronic nephropathy. Intentional abuse of toluene vapors by 'glue-sniffers' has been associated with damage to the kidneys.
Liver	Inhalation of gasoline vapor increased liver weights, urinary excretion of ascorbic acid, and hepatic enzyme activity in male rats. Liver weight increases were seen in rats dosed orally for 90 days with a xylene mixture also containing ethylbenzene. Reversible liver damage has been reported in persons exposed to toluene by solvent abuse. Prolonged and repeated consumption of ethanol has been shown to cause liver damage in animals and cirrhosis in humans.
Neurotoxicity	Rats receiving prolonged and repeated exposure to high doses of xylene have shown hearing loss. Prolonged and repeated exposures to high toluene concentrations (mixed solvent) have resulted in hearing loss in laboratory animals. There have also been reports of hearing damage in humans overexposed to toluene and other solvents, however, these effects and their possible relationship to noise exposure remain uncertain. Intentional inhalation ('glue-sniffing') and resulting overexposure to toluene vapors has been linked to brain injury.
Sensitization	Gasoline and component petroleum streams blended to produce it were tested in animal studies and found not to cause skin sensitization.
Systemic Toxicity	Laboratory animals exposed to prolonged and repeated doses of xylenes by various routes have shown effects in liver, kidneys, lungs, spleen, heart, blood and adrenals. Persons on disulfiram (Antabuse(R)) therapy should be aware that the ethyl alcohol in this product is hazardous to them just as is alcohol from any source. Disulfiram reactions (vomiting, headache and even collapse) may follow ingestion of small amounts of alcohol and have also been described from skin contact.

SECTION 12	ECOLOGICAL INFORMATION
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Environmental Impact Summary:

There is no ecological data available for this product.

SECTION 13	DISPOSAL CONSIDERATIONS
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RCRA Information:

Under RCRA, it is the responsibility of the user of the material to determine, at the time of the disposal, whether the material meets RCRA criteria for hazardous waste. This is because material uses, transformations, mixtures, processes, etc. may affect the classification. Refer to the latest EPA, state and local regulations regarding proper disposal.

SECTION 14	TRANSPORT INFORMATION
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US Department of Transportation Classification

Proper Shipping Name: Alcohols, N.O.S.

Technical Names (s): Ethanol, Petroleum Distillate
Identification Number: UN1987
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II

Marine Pollutant % of Total:

Marine Pollutant: Marine Pollutant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.

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International Air Transport Association

Hazard Class/Division: 3 (Flammable Liquid)
Identification Number: UN1987
Packing Group: II
Proper Shipping Name: Alcohols, N.O.S. (Contains Ethanol and Gasoline)
Technical Name(s): Ethanol, Gasoline

International Maritime Organization Classification

Hazard Class/Division: 3 (Flammable Liquid)
Identification Number: UN1987
Packing Group: II
Proper Shipping Name: Alcohols, N.O.S.
Technical Name(s): Ethanol, Gasoline

SECTION 15	REGULATORY INFORMATION
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Federal Regulatory Status

OSHA Classification:

Product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Comprehensive Environmental Release, Compensation & Liability Act (CERCLA):

Benzene RQ 10 lbs Reportable Spill => 4096.961421 lbs
or 682.53 gal

Ozone Depleting Substances (40 CFR 82 Clean Air Act):

This material does not contain nor was it directly manufactured with any Class I or Class II ozone depleting substances.

Superfund Amendment & Reauthorization Act (SARA) Title III:

There are no components in this product on the SARA 302 list.

SARA Hazard Categories (311/312):

Immediate Health	Delayed Health	Fire	Pressure	Reactivity
YES	YES	YES	NO	NO

SARA Toxic Release Inventory (TRI) (313):

Toluene, Benzene

Toxic Substances Control Act (TSCA) Status:

All component(s) of this material is(are) listed on the EPA/TSCA Inventory of Chemical Substances.

Other Chemical Inventories:

Australian AICS, Chinese Inventory, European EINECS, Japan ENCS, Korean Inventory, Philippines PICCS,

State Regulation

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65).

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

New Jersey Right-To-Know Chemical List:

Benzene (71-43-2)	0 - 0.25 %weight	Carcinogen
Benzene (71-43-2)	0 - 0.25 %weight	Mutagen
Benzene, Methyl- (108-88-3)	0 - 1.5 %weight	
Ethanol (64-17-5)	95 - 98 %weight	
Xylenes (1330-20-7)	0 - 1.5 %weight	

Pennsylvania Right-To-Know Chemical List:

Benzene (71-43-2)	0 - 0.25 %weight	Spec Haz Sub/Env Hazardous
Benzene, dimethyl- (1330-20-7)	0 - 1.5 %weight	Environmental Hazard
Benzene, Methyl- (108-88-3)	0 - 1.5 %weight	Environmental Hazard
Ethanol (64-17-5)	95 - 98 %weight	

SECTION 16

OTHER INFORMATION

Revision#: 2

Review Date: 01/04/2006

Revision Date: 04/14/2003

Revisions since last change (discussion): This Material Safety Data Sheet (MSDS) has been reviewed to fully comply with the guidance contained in the ANSI MSDS standard (ANSI Z400.1-1998). We encourage you to take the opportunity to read the MSDS and review the information contained therein.

SECTION 17

LABEL INFORMATION

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29

CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

PRODUCT CODE(S): 02704, 05482

Denatured Ethanol

DANGER!

EXTREMELY FLAMMABLE. VAPORS MAY EXPLODE. CAUSES SEVERE EYE IRRITATION. OVEREXPOSURE TO VAPORS CAN CAUSE CNS DEPRESSION. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS BENZENE WHICH IS A CANCER HAZARD - LINKED TO DEVELOPMENT OF ACUTE MYELOGENOUS LEUKEMIA. LONG-TERM EXPOSURE TO GASOLINE VAPORS HAS CAUSED CANCER IN LABORATORY ANIMALS. The following organs and/or organ systems may be damaged by overexposure to this material and/or its components.

MAY CAUSE DAMAGE TO: Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver

Refer to Section 11, Toxicological Information, for specific information on the following effects:
Developmental Toxicity, Genotoxicity

Precautionary Measures:

Avoid heat, sparks, open flames and other ignition sources. Avoid breathing of vapors, fumes, or mist. Do not take internally. Use only with adequate ventilation. Keep container closed when not in use. Wash thoroughly after handling.

FIRST AID

Inhalation: Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. DO NOT attempt to rescue victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin Contact: Flush exposed area with water and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye Contact: Immediately flush eyes with large amounts of water for at least 30 minutes, by the clock, while holding eyelids open. Transport to nearest medical facility for additional treatment.

Ingestion: DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

FIRE

In case of fire, Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

SPILL OR LEAK

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in

non-leaking container and seal tightly for proper disposal.

CONTAINS: Ethanol, 64-17-5; Unleaded Gasoline, Mixture; Toluene, 108-88-3; Xylene, mixed isomers, 1330-20-7; Benzene, 71-43-2; Ethyl Benzene, 100-41-4; Miscellaneous Hydrocarbons,

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

TRANSPORTATION

US Department of Transportation Classification

Proper Shipping Name: Alcohols, N.O.S.
Technical Names (s): Ethanol, Petroleum Distillate
Identification Number: UN1987
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II

Marine Pollutant % of Total:

Marine Pollutant: Marine Pollutant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.

Emergency Response Guide #127

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65).

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flames or heat. Keep container closed and drum bungs in place.

Name and Address

Motiva Enterprises LLC
P.O. Box 4540
Houston, TX 77210-4540

ADMINISTRATIVE INFORMATION	
MANUFACTURER ADDRESS:	Motiva Enterprises LLC, P.O. Box 4540, Houston, TX. 77210-4540

THE INFORMATION CONTAINED IN THIS DATA SHEET IS BASED ON THE DATA AVAILABLE TO US AT THIS TIME, AND IS BELIEVED TO BE ACCURATE BASED UPON THAT : IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT, FOR PURPOSE OF HAZARD COMMUNICATION. IT IS NOT INTENDED TO CONSTITUTE PRODUCT PERFORMANCE INFORMATION, AND NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND IS MADE WITH RESPECT TO THE PRODUCT, UNDERLYING DATA OR THE INFORMATION CONTAINED HEREIN. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE, AND ARE ENCOURAGED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE THE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, YOU SHOULD CONSULT WITH YOUR LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. WE WILL NOT PROVIDE ADVICE ON SUCH MATTERS, OR BE RESPONSIBLE FOR ANY INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN. THE UNDERLYING DATA, AND THE INFORMATION PROVIDED HEREIN AS A RESULT OF THAT DATA, IS THE PROPERTY OF MOTIVA ENTERPRISES LLC AND IS NOT TO BE THE SUBJECT OF SALE OR EXCHANGE WITHOUT THE EXPRESS WRITTEN CONSENT OF MOTIVA ENTERPRISES LLC.

44322-12060-100R-01/04/2006

HiTEC 6591S Fuel Additive

MSDS no. H6591S

HiTEC is a trademark owned by Afton Chemical Corporation or one of its subsidiaries.

1. Product and company identification

Product use Petrochemical industry: Fuel additive.

Date of issue/Revisions 17 November 2010

In case of emergency - Chemical

 +1-800-403-0044 (US & Canada)
 +1-804-648-7727 (International)
 +32-2-507-20-64 (Europe)
 +81 345 789 341 (Japan)
 +65 3158-1074 (Asia Pacific)
 +86 10 5100 3039 (China)
 +61 2801 44558 (Australia)

Manufacturer / Supplier

 Afton Chemical Corporation
 500 Spring St.
 Richmond, VA 23219
 Telephone number: +1-804-788-5800

 Afton Chemical Limited
 Euro-Tech Centre
 London Road, Bracknell, Berkshire
 RG12 2UW, England
 Telephone Number: +44 1344 304141
 msds@aftonchemical.com

 In Singapore:
 Afton Chemical Asia Pte. Ltd.
 111 Somerset Road
 #09-05
 TripleOne Somerset
 Singapore 238164
 Telephone number: +65 3732 0822
 Fax: +65 3737 4123

2. Hazards identification

Notice to reader

Afton operates a world-wide system for hazard communication. Some hazards shown in Section 2 may apply to non-EU countries and may not result in classification and labeling in the EU. Please see Sections 3 and 15 for country specific classification information, and Section 11 for additional details.

Europe: The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Australia: HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

 Primary hazards and critical effects : Warning.
 CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

 Physical/chemical hazards : COMBUSTIBLE. - United States and Canada
 FLAMMABLE. - European Union
 VAPOR MAY CAUSE FLASH FIRE.

Environmental hazards : Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Hazardous Material Information System (U.S.A.)

Health	1
Fire hazard	2
Reactivity	0

3. Composition/information on ingredients

Note: see section 8 for occupational exposure limits and section 11 for LC50/LD50 information

Substance/Preparation : Preparation

Ingredient name

CAS no.

Conc. (% w/w) EU Classification

 WHMIS
Regulated?

Solvent naphtha (petroleum), light aromatic	64742-95-6	30 - 60	R10 Xn; R65 Xi; R37 R66, R67 N; R51/53	Yes.
Polyolefin alkyl phenol alkyl amine	Proprietary	30 - 60	Xi; R36/38	Yes.
Benzene, 1,2,4-trimethyl-	95-63-6	10 - 19.9	R10 Xn; R20 Xi; R36/37/38 N; R51/53	Yes.
Benzene, 1,3,5-trimethyl-	108-67-8	5 - 9.9	R10 Xi; R37 N; R51/53	Yes.
N-Propylbenzene	103-65-1	1 - 4.9	R10 Xn; R65 Xi; R37 N; R51/53	Yes.
Xylene	1330-20-7	1 - 4.9	R10 Xn; R20/21 Xi; R38	Yes.
Cumene	98-82-8	1 - 4.9	R10 Xn; R65 Xi; R37 N; R51/53	Yes.
2-Ethyl hexanol	104-76-7	1 - 4.9	Xi; R36/38	Yes.
Benzene, 1,2,3-trimethyl-	526-73-8	1 - 4.9	R10	Yes.
Solvent naphtha (petroleum), heavy aromatic	64742-94-5	0.5 - 0.99	Xn; R65 R66, R67 N; R51/53	Yes.
Naphthalene	91-20-3	0.1 - 0.5	Carc. Cat. 3; R40 Xn; R22 N; R50/53	Yes.

4. First aid measures

Inhalation	: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Ingestion	: If affected person is fully conscious, give one glass of water to drink. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.
Skin contact	: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately.
Eye contact	: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

5. Fire-fighting measures

Extinguishing media	: In case of fire, use water spray (fog), foam, dry chemical or CO ₂ .
Fire-fighting procedures	: Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.
Fire/explosion hazards	: COMBUSTIBLE. - United States and Canada FLAMMABLE. - European Union VAPOR MAY CAUSE FLASH FIRE. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
Hazardous decomposition products	: Decomposition products may include the following materials: carbon dioxide carbon monoxide
Flash point	: Closed cup: 44°C (111.2°F) [Pensky-Martens. Closed cup]

6. Accidental release measures

Personal precautions	: Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Follow all fire-fighting procedures (section 5). Do not touch or walk through spilled material.
Environmental precautions and clean-up methods	: If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal. Avoid contact of spilled material with soil and prevent runoff entering surface waterways.

Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

- Handling** : Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling.
- Storage** : Keep container in a well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

8. Exposure controls/personal protection

- Engineering controls** : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.
- Personal protective equipment**
- Respiratory system** : Use appropriate respiratory protection if there is the potential to exceed the exposure limit(s).
- Skin and body** : Where contact is likely, wear chemical resistant gloves, a chemical resistant suit, and boots. Additional body garments should be used based upon the task being performed.
- Hands** : Hand Protection: Wear chemical resistant gloves. Nitrile gloves of minimum thickness 0.4 mm have an expected breakthrough time of 30 minutes or less when in frequent contact with the product. Due to variable exposure conditions the user must consider that the practical use of a chemical-protective glove in practice may be much shorter than the permeation time above. Manufacturer's directions for use, especially about the minimum thickness and the minimum breakthrough time, must be observed. This information does not replace suitability tests by the end user since glove protection varies depending on the conditions under which the product is used.
- Eyes** : Safety goggles are considered minimum protection. Goggles with a face shield may be necessary depending on quantity of material and conditions of use.

Occupational exposure limits

<u>Ingredient name</u>	<u>OEL United States</u>	<u>OEL Canada</u>	<u>OEL Europe</u>	<u>OEL Australia</u>
1) Benzene, 1,2,4-trimethyl-	ACGIH (United States, 1999). TWA: 25 ppm	(Canada). TWA: 25 ppm	EH40 (UK) (Europe). TWA: 25 ppm	ACGIH (United States, 1999). TWA: 25 ppm
2) Benzene, 1,3,5-trimethyl-	ACGIH (United States, 1999). TWA: 25 ppm	(Canada). TWA: 25 ppm	EH40 (UK) (Europe). TWA: 25 ppm	ACGIH (United States, 1999). TWA: 25 ppm
3) Xylene	ACGIH (United States, 1996). TWA: 100 ppm STEL: 150 ppm OSHA (United States). TWA: 100 ppm	(Canada). TWA: 100 STEL: 150	EH40 (UK) (Europe, 2002). Absorbed through skin. TWA: 50 ppm 8 hour(s). STEL: 100 ppm 15 minute(s).	NOHSC (Australia, 2003). STEL: 80 ppm 15 minute(s).
4) Cumene	ACGIH (United States, 1994). Absorbed through skin. TWA: 50 ppm OSHA (United States, 1989). Absorbed through skin. TWA: 50 ppm	(Canada). Absorbed through skin. TWA: 50 ppm	EH40 (UK) (Europe). Absorbed through skin. TWA: 25 ppm 8 hour(s). EH40 (UK) (Europe, 2002). Absorbed through skin. TWA: 125 mg/m ³ 8 hour(s). STEL: 250 mg/m ³ 15 minute(s).	NOHSC (Australia, 2003). Absorbed through skin. TWA: 25 ppm 8 hour(s). STEL: 75 ppm 15 minute(s).
5) Benzene, 1,2,3-trimethyl-	ACGIH (United States, 1999). TWA: 25 ppm	(Canada). TWA: 25 ppm	ACGIH (United States, 1999). TWA: 25 ppm	ACGIH (United States, 1999). TWA: 25 ppm
6) Naphthalene	ACGIH TLV (United States). Absorbed through skin. TWA: 10 ppm STEL: 15 ppm OSHA PEL (United States). TWA: 10 ppm	ACGIH TLV (United States). Absorbed through skin. TWA: 10 ppm STEL: 15 ppm	ACGIH TLV (United States). Absorbed through skin. TWA: 10 ppm STEL: 15 ppm	ACGIH TLV (United States). Absorbed through skin. TWA: 10 ppm STEL: 15 ppm

9. Physical and chemical properties

Physical state and Appearance : Liquid.
 Color : Clear. Light Amber.
 Density : Not determined.
 Specific gravity : 0.9151 @ 15.6°C
 Viscosity : 19 cSt at 40°C
 Auto-ignition temperature : Not determined.
 Flash point : Closed cup: 44°C (111.2°F) [Pensky-Martens. Closed cup]

10. Stability and reactivity

Stability : The product is stable.
 Materials to avoid : Strong oxidizing and reducing agents.
 Conditions to avoid : High temperatures, sparks, and open flames.

11. Toxicological information

Routes of entry : Skin, Eyes, Ingestion, and Inhalation.
 Target organs : Contains material which may cause damage to the following organs: blood, kidneys, lungs, liver, heart, gastrointestinal tract, upper respiratory tract, immune system, skin, eyes, central nervous system (CNS).
 Acute effects
 Inhalation : Irritating to respiratory system.
 Ingestion :
 Ingestion may cause gastrointestinal irritation and diarrhea.
 Skin contact : Irritating to skin.
 Eye contact : Irritating to eyes.
 Adverse effects :
 - Adverse symptoms may include the following:: In the presence of slight maternal toxicity, fetotoxic effects have been observed in the offspring of rats exposed by inhalation to Solvent Naphtha (petroleum) light aromatic.
 - Adverse symptoms may include the following:: This product contains trimethylbenzene. Literature data indicate that long-term inhalation exposure causes blood effects in laboratory animals.
 - Adverse symptoms may include the following:: Central nervous system, liver, kidneys, and blood effects by inhalation and heart beat irregularity (arrhythmia) and heart beat - increase. High exposures to xylene in some animal studies, often at levels toxic to the mother, affected embryo/fetal development. The significance of this finding to humans is not known. Xylene vapour has caused occupational skin sensitization in humans.
 - Adverse symptoms may include the following:: liver, kidneys, lungs, and heart effects by dermal route and immune system effects by ingestion route. Not a developmental toxicant when administered dermally. Weak carcinogenic liver response was observed in mice, but not rats.

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA	EU
Xylene	A4	-	-	-	-	-	-

Toxicity data

Product/ingredient name	Result	Species	Dose	Exposure
Solvent naphtha (petroleum), light aromatic	LD50 Oral	Rat	8400 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
	LD50 Oral	Rat	2900 mg/kg	-
Benzene, 1,2,4-trimethyl-	LD50 Dermal	Rabbit	3160 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
	LD50 Oral	Rat	3400 to 6000 mg/kg	-
	LC50 Inhalation Vapor	Rat	18000 mg/m ³	4 hours
Benzene, 1,3,5-trimethyl-	LC50 Inhalation Vapor	Rat	24000 mg/m ³	4 hours
	LD50 Oral	Rat	6040 mg/kg	-
N-Propylbenzene	LD50 Dermal	Rabbit	>14100 mg/kg	-
Xylene	LD50 Oral	Rat	4300 mg/kg	-
	LC50 Inhalation Vapor	Rat	5000 to 8500 ppm	4 hours
	LD50 Dermal	Rabbit	10578 mg/kg	-
Cumene	LD50 Oral	Mouse	12750 mg/kg	-
	LD50 Oral	Rat	1400 mg/kg	-
	LD50 Oral	Rat	1400 mg/kg	-

2-Ethyl hexanol	LC50 Inhalation Vapor	Rat	8000 ppm	4 hours
	LD50 Dermal	Rabbit	1970 mg/kg	-
	LD50 Dermal	Rabbit	1700 mg/kg	-
	LD50 Oral	Rat	2000 to 5000 mg/kg	-
	LD50 Oral	Mouse	2000 to 3800 mg/kg	-
	LD50 Oral	Guinea pig	1900 mg/kg	-
	LC50 Inhalation Vapor	Rat	>227 ppm	6 hours

Other information : Not available.











12. Ecological information

Environmental hazards : Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment. Based on calculation.
Environmental fate : This product contains components which may be persistent in the environment.

13. Disposal considerations

Waste handling and disposal : Waste must be disposed of in accordance with federal, state and local environmental control regulations.

14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1993	Combustible liquids, n.o.s. (Xylene, Petroleum distillates)	3	I		-
TDG Classification	UN1993	Flammable liquid, n.o.s. (Xylene, Petroleum distillates)	3	I		-
ADR/RID Class	UN1993	Flammable liquid, n.o.s. (Xylene, Petroleum distillates)	3	I	 	Tunnel code (D/E)
IMDG Class	UN1993	Flammable liquid, n.o.s. (Xylene, Petroleum distillates)	3	I	 	- Marine pollutant
IATA-DGR Class	UN1993	Flammable liquid, n.o.s. (Xylene, Petroleum distillates)	3	I	 	-
ADG Class	UN1993	Flammable liquid, n.o.s. (Xylene, Petroleum distillates)	3	I	 	-

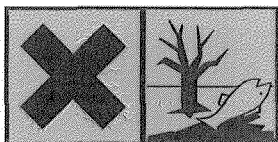
Notice to reader

The above transport information is provided to assist in the proper classification of this product and may not be suitable for all shipping conditions.

15. Regulatory information

EU regulations

Hazard symbol(s) :



Irritant, Dangerous for the environment

Risk phrases	: R10- Flammable. R36/37/38- Irritating to eyes, respiratory system and skin. R67- Vapors may cause drowsiness and dizziness. R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.	
Safety phrases	: S16- Keep away from sources of ignition - No smoking. S23- Do not breathe vapor. S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. S57- Use appropriate containment to avoid environmental contamination.	
Contains	: Solvent naphtha (petroleum), light aromatic	265-199-0
US regulations		
SARA 313 toxic chemical notification and release reporting (w/w%)	: Benzene, 1,2,4-trimethyl-Xylene Cumene	10 - 19.9 1 - 4.9 1 - 4.9
SARA 311/312 Hazardous Categorization	: SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard	
RQ (Reportable quantity)	: CERCLA: Hazardous substances.: Xylene: 100 lbs. (45.4 kg); CUMENE: 5000 lbs. (2270 kg); Ethylbenzene: 1000 lbs. (454 kg); Naphthalene: 100 lbs. (45.4 kg); STYRENE: 1000 lbs. (454 kg); Toluene: 1000 lbs. (454 kg); Benzene: 10 lbs. (4.54 kg); P-XYLENE: 100 lbs. (45.4 kg); Acetaldehyde: 1000 lbs. (454 kg); FURAN: 100 lbs. (45.4 kg); Propylene oxide: 100 lbs. (45.4 kg); o-XYLENE: 1000 lbs. (454 kg); DI-SEC-OCTYL PHTHALATE: 100 lbs. (45.4 kg); MALEIC ANHYDRIDE: 5000 lbs. (2270 kg);	
State - California Prop. 65	: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Cumene Naphthalene Ethylbenzene Toluene Benzene DI(2-ETHYLHEXYL) PHTHALATE Furan Propylene oxide Acetaldehyde	
Canadian regulations		
WHMIS (Classification)	: Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). Class D-2A: Material causing other toxic effects (Very toxic). Class D-2B: Material causing other toxic effects (Toxic).	
International Inventory Status		
United States (TSCA)	: All components are listed or exempted.	
Canada	: All components are listed or exempted.	
Europe	: All components are listed or exempted.	
Japan (ENCS)	: All components are listed or exempted.	
Australia (NICNAS)	: At least one component is not listed.	
Korea (ECL)	: All components are listed or exempted.	
China (IECSC)	: At least one component is not listed.	
Philippines (PICCS)	: All components are listed or exempted.	

16. Other information

PREPARATION INFORMATION

Validated by HS&E Department (Tel: +1 804 788 5800) on 11/17/2010.

▼
Date of printing : 11/18/2010.

Indicates information that has changed from previously issued version.

Notice to reader

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Beijing 100004 China
Telephone number: +86 10 6505 5945

Full text of R-phrases appearing in section 3:

: R10- Flammable.
R40- Limited evidence of a carcinogenic effect.
R20- Harmful by inhalation.
R22- Harmful if swallowed.
R20/21- Harmful by inhalation and in contact with skin.
R65- Harmful: may cause lung damage if swallowed.
R37- Irritating to respiratory system.
R38- Irritating to skin.
R36/38- Irritating to eyes and skin.
R37/38- Irritating to respiratory system and skin.
R36/37/38- Irritating to eyes, respiratory system and skin.
R66- Repeated exposure may cause skin dryness or cracking.
R67- Vapors may cause drowsiness and dizziness.
R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

*** END OF MSDS ***



Safety data sheet

Keropur® AP 205 20M

Revision date : 2009/04/07
Version: 1.0

Page: 1/6
(30339574/SDS_GEN_US/EN)

1. Substance/preparation and company identification

Company
BASF CORPORATION
100 Campus Drive
Florham Park, NJ 07932

24 Hour Emergency Response Information
CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP

Synonyms: Keropur AP 205 20M, Puredd AP 205 20M

2. Composition/information on ingredients

<u>CAS Number</u>	<u>Content (W/W)</u>	<u>Chemical name</u>
1330-20-7	80.46 %	NJTSRN 489909-6625 PC
100-41-4	18.83 %	Xylene
	3.91 %	ethylbenzene

3. Hazard Identification

Emergency overview

WARNING: COMBUSTIBLE LIQUID. CAUSES SKIN IRRITATION.
May cause irritation.
MAY CAUSE RESPIRATORY TRACT IRRITATION.
CONTAINS MATERIAL WHICH CAN CAUSE NERVOUS SYSTEM DAMAGE.
CONTAINS MATERIAL WHICH CAN CAUSE LIVER DAMAGE.
CONTAINS MATERIAL WHICH CAN CAUSE KIDNEY DAMAGE.
Harmful; may cause lung damage if swallowed.
Avoid contact with the skin, eyes and clothing.
Avoid inhalation of mists/vapours.
Provide local exhaust ventilation to control vapours/mists.
Wear NIOSH-certified chemical goggles.
Wear chemical resistant protective gloves.
Wear protective clothing.
Eye wash fountains and safety showers must be easily accessible.

Potential health effects

Primary routes of exposure

Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

Acute toxicity:

Information on: Xylene

Aspiration of xylene may result in chemical pneumonitis, pulmonary edema and hemorrhage. Ingestion and skin absorption may lead to CNS depression, symptoms may include nausea, dizziness and blurred vision.

Safety data sheet

Kerapur® AP 205 20M

Revision date : 2009/04/07

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(30339574/SDS GEN US/EN)

Irritation:

Information on: Xylene

Eye contact with xylene may result in reversible damage, and dermatitis may result from skin contact.

Repeated dose toxicity:

Information on: Xylene

The chronic effects of overexposure to xylene include possible liver and kidney damage. A mixture of o, m, and p-xylenes was teratogenic and embryo toxic to mice by the oral route; however, these effects were accompanied by maternal toxicity. Rats exposed to 1000 mg/m³ by inhalation exhibited no teratogenic effects; however, minor skeletal abnormalities occurred.

4. First-aid measures

General advice:

Remove contaminated clothing.

If inhaled:

Keep patient calm, remove to fresh air. Assist in breathing if necessary. Seek medical attention if necessary.

If on skin:

Wash affected areas thoroughly with soap and water. Seek medical attention.

If in eyes:

In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. If irritation develops, seek medical attention.

If swallowed:

Immediately rinse mouth and then drink plenty of water, do not induce vomiting, seek medical attention. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Seek medical attention.

5. Fire-fighting measures

Flash point: 31.1 °C (ASTM D93)

Hazards during fire-fighting:

Irritant gases/vapours, combustible vapours

Protective equipment for fire-fighting:

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:

Do not allow to enter drains or waterways. Approach with extreme caution.

NFPA Hazard codes:

Health : 2 Fire : 2 Reactivity : 0 Special :

6. Accidental release measures

Personal precautions:

Use breathing apparatus if exposed to vapours/dust/aerosol. Do not get in eyes, on skin, or on clothing. Take appropriate protective measures.

Environmental precautions:

Do not discharge into drains/surface waters/groundwater.

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Keropur® AP 205 20M

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(30339574/SDS GEN US/EN)

Cleanup:

Dispose of absorbed material in accordance with regulations.

For large amounts: Pick up with inert absorbent material (e.g. sand, earth etc.). Spills should be contained and placed in suitable containers for disposal.

Further information:

Pack in tightly closed containers for disposal.

7. Handling and storage

Handling

General advice:

Keep away from sources of ignition - No smoking. Handle and open container with care. Keep container tightly sealed.

Protection against fire and explosion:

Vapours may form ignitable mixture with air. Avoid all sources of ignition: heat, sparks, open flame. Avoid extreme heat. Empty containers may contain flammable residue. The product is combustible.

Storage

General advice:

Keep container tightly closed and dry; store in a cool place. Avoid all sources of ignition: heat, sparks, open flame.

Storage incompatibility:

General: Segregate from acids and bases. Segregate from oxidizing agents.

8. Exposure controls and personal protection

Components with workplace control parameters

Xylene	OSHA	PEL 100 ppm 435 mg/m ³ ;
	ACGIH	TWA value 100 ppm ; STEL value 150 ppm ;
ethylbenzene	OSHA	PEL 100 ppm 435 mg/m ³ ;
	ACGIH	TWA value 100 ppm ; STEL value 125 ppm ;

Advice on system design:

Provide adequate exhaust ventilation to control work place concentrations.

Personal protective equipment

Hand protection:

Wear chemical resistant protective gloves., Consult with glove manufacturer for testing data.

Eye protection:

Tightly fitting safety goggles (chemical goggles).

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:

Avoid prolonged and/or repeated contact with the skin. Avoid Inhalation of vapour. Do not get in eyes, on skin, or on clothing. Avoid all routes of exposure including ingestion, skin absorption and inhalation. Keep away from food, drink and animal feeding stuffs. Take off immediately all contaminated clothing. Handle in accordance with good industrial hygiene and safety practice.

Safety data sheet

Keropur® AP 205 20M

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9. Physical and chemical properties

Form:	liquid	
Odour:	amine-like	
Colour:	colourless to yellowish	
pH value:	10.1	(1 %(m))
pour point:	-43 °C	
Boiling point:	166 °C	(1,013 bar)
Vapour pressure:	< 5 mmHg	(20 °C)
Density:	0.8978 g/cm ³	(15 °C) (ISO 2811-3)
Viscosity, kinematic:	13.9 mm ² /s	
Solubility in water:		partly soluble
Solubility (qualitative):	solvent(s): hydrocarbons,	

10. Stability and reactivity

Hazardous reactions:
The product is chemically stable.

Corrosion to metals:
No corrosive effect on metal.

11. Toxicological information

Acute toxicity

Oral:
LD50/rat: > 2,000 mg/kg
Literature data.

Skin irritation:
rabbit: irritant.

Eye irritation :
rabbit: non-irritant

Chronic toxicity

Other information:
The product has not been tested. The statements on toxicology have been derived from the properties of the individual components.

12. Ecological information

Environmental fate and transport

Biodegradation:
Evaluation: The product is not very soluble in water and can thus be removed from water mechanically in suitable effluent treatment plants.

Environmental toxicity

Safety data sheet

Keropur® AP 205 20M

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(30339574/SDS GEN US/EN)

Acute and prolonged toxicity to fish:
zebra fish/LC50 (96 h): 10 - 100 mg/l

Toxicity to microorganisms:
bacterium/EC10 (0.5 h): 1,400 mg/l

Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations.

Other ecotoxicological advice:

The product has not been tested. The statements on ecotoxicology have been derived from the properties of the individual components.

13. Disposal considerations

Waste disposal of substance:

Dispose of in accordance with national, state and local regulations.

Container disposal:

WARNING: Empty containers may still contain hazardous residue.

14. Transport information

Land transport

USDOT

Hazard class: 3

Packing group: III

ID number: UN 1993

Hazard label: 3

Proper shipping name: FLAMMABLE LIQUID, N.O.S. (contains XYLENE, ETHYLBENZENE)

Sea transport

IMDG

Hazard class: 3

Packing group: III

ID number: UN 1993

Hazard label: 3

Marine pollutant: NO

Proper shipping name: FLAMMABLE LIQUID, N.O.S. (contains XYLENE, ETHYLBENZENE)

Air transport

IATA/ICAO

Hazard class: 3

Packing group: III

ID number: UN 1993

Hazard label: 3

Proper shipping name: FLAMMABLE LIQUID, N.O.S. (contains XYLENE, ETHYLBENZENE)

15. Regulatory Information

Federal Regulations

Registration status:

TSCA, US

released / listed

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OSHA hazard category: IARC 1, 2A or 2B carcinogen, Chronic target organ effects reported, Acute target organ effects reported, ACGIH TLV established, Skin and/or eye irritant, Combustible Liquid

SARA hazard categories (EPCRA 311/312): Acute, Chronic, Fire

SARA 313:

CAS Number	Chemical name
100-41-4	ethylbenzene
1330-20-7	Xylene

State regulations

State RTK

CAS Number	Chemical name	State RTK
1330-20-7	Xylene	MA, PA
100-41-4	ethylbenzene	MA, NJ, PA

CA Prop. 65:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

16. Other information

HMS III rating

Health: 2+ Flammability: 2 Physical hazard: 0

HMS uses a numbering scale ranging from 0 to 4 to indicate the degree of hazard. A value of zero means that the substance possesses essentially no hazard; a rating of four indicates high hazard.

Local contact information

prod_reg@basf.com

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END OF DATA SHEET

NEMO 1121

MSDS no.

NEMO1121

1. Product and company identification

Product use

Petrochemical industry: Fuel additive.

Date of issue/Revisions

19 April 2011

In case of emergency - Chemical

+1-800-403-0044 (US & Canada)
 +1-804-648-7727 (International)
 +32-2-507-20-64 (Europe)
 +81 345 789 341 (Japan)
 +65 3158-1074 (Asia Pacific)
 +86 10 5100 3039 (China)
 +61 2801 44558 (Australia)

Manufacturer / Supplier

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2. HAZARDS IDENTIFICATION

Notice to reader

Afton operates a world-wide system for hazard communication. Some hazards shown in Section 2 may apply to non-EU countries and may not result in classification and labeling in the EU. Please see Sections 3 and 15 for country specific classification information, and Section 11 for additional details.

Europe: The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Australia: HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

Primary hazards and critical effects : Warning.
 CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
 ASPIRATION HAZARD IF SWALLOWED.

Physical/chemical hazards : COMBUSTIBLE. - United States and Canada
 FLAMMABLE. - European Union
 VAPOR MAY CAUSE FLASH FIRE.

Environmental hazards : Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

**Hazardous Material
 Information System
 (U.S.A.)**

Health	1
Fire hazard	2
Reactivity	0

3. Composition/information on ingredients

Note: see section 8 for occupational exposure limits and section 11 for LC50/LD50 information

Substance/Preparation

: Preparation

Ingredient name
CAS no.
Conc. (% w/w)
EU Classification
**WHMIS
 Regulated?**

Solvent naphtha (petroleum), light aromatic	64742-95-6	30 - 60	R10 Xn; R65 Xi; R37 R66, R67 N; R51/53	Yes.
Polyolefin alkyl phenol alkyl amine	Proprietary	20 - 30	Xi; R36/38	Yes.
Benzene, 1,2,4-trimethyl-	95-63-6	10 - 19.9	R10 Xn; R20 Xi; R36/37/38 N; R51/53	Yes.
Benzene, 1,3,5-trimethyl-	108-67-8	5 - 9.9	R10 Xi; R37 N; R51/53	Yes.
N-Propylbenzene	103-65-1	5 - 9.9	R10 Xn; R65 Xi; R37 N; R51/53	Yes.
Xylene	1330-20-7	1 - 4.9	R10 Xn; R20/21 Xi; R38	Yes.
2-Ethyl hexanol	104-76-7	1 - 4.9	Xi; R36/38	Yes.
Cumene	98-82-8	1 - 4.9	R10 Xn; R65 Xi; R37 N; R51/53	Yes.
Benzene, 1,2,3-trimethyl-	526-73-8	1 - 4.9	R10	Yes.
Solvent naphtha (petroleum), heavy aromatic	64742-94-5	0.5 - 0.99	Xn; R65 R66, R67 N; R51/53	Yes.

4. First aid measures

Inhalation	: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Ingestion	: DO NOT induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. If affected person is fully conscious, give one glass of water to drink. Never give anything by mouth to an unconscious person. Get immediate medical attention.
Skin contact	: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately.
Eye contact	: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

5. Fire-fighting measures

Extinguishing media	: In case of fire, use water spray (fog), foam, dry chemical or CO ₂ .
Fire-fighting procedures	: Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.
Fire/explosion hazards	: COMBUSTIBLE. - United States and Canada FLAMMABLE. - European Union VAPOR MAY CAUSE FLASH FIRE. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
Hazardous decomposition products	: Decomposition products may include the following materials: carbon dioxide carbon monoxide
Flash point	: Closed cup: 44°C (111.2°F) [Pensky-Martens. Minimum]

6. Accidental release measures

Personal precautions	: Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Follow all fire-fighting procedures (section 5). Do not touch or walk through spilled material.
Environmental precautions and clean-up methods	: If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal. Avoid contact of spilled material with soil and prevent runoff entering surface waterways.

Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

- Handling** : Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling.
- Storage** : Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

8. Exposure controls/personal protection

- Engineering controls** : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.
- Personal protective equipment**
- Respiratory system** : Use appropriate respiratory protection if there is the potential to exceed the exposure limit(s).
- Skin and body** : Where contact is likely, wear chemical resistant gloves, a chemical resistant suit, and boots. Additional body garments should be used based upon the task being performed.
- Hands** : Hand Protection: Wear chemical resistant gloves. Nitrile gloves of minimum thickness 0.4 mm have an expected breakthrough time of 30 minutes or less when in frequent contact with the product. Due to variable exposure conditions the user must consider that the practical use of a chemical-protective glove in practice may be much shorter than the permeation time above. Manufacturer's directions for use, especially about the minimum thickness and the minimum breakthrough time, must be observed. This information does not replace suitability tests by the end user since glove protection varies depending on the conditions under which the product is used.
- Eyes** : Safety goggles are considered minimum protection. Goggles with a face shield may be necessary depending on quantity of material and conditions of use.

Occupational exposure limits

<u>Ingredient name</u>	<u>OEL United States</u>	<u>OEL Canada</u>	<u>OEL Europe</u>	<u>OEL Australia</u>
1) Benzene, 1,2,4-trimethyl-	ACGIH (United States, 1999). TWA: 25 ppm	(Canada). TWA: 25 ppm	EH40 (UK) (Europe). TWA: 25 ppm	ACGIH (United States, 1999). TWA: 25 ppm
2) Benzene, 1,3,5-trimethyl-	ACGIH (United States, 1999). TWA: 25 ppm	(Canada). TWA: 25 ppm	EH40 (UK) (Europe). TWA: 25 ppm	ACGIH (United States, 1999). TWA: 25 ppm
3) Xylene	ACGIH (United States, 1996). TWA: 100 ppm STEL: 150 ppm OSHA (United States). TWA: 100 ppm	(Canada). TWA: 100 STEL: 150	EH40 (UK) (Europe, 2002). Absorbed through skin. TWA: 50 ppm 8 hour(s). STEL: 100 ppm 15 minute(s).	NOHSC (Australia, 2003). STEL: 80 ppm 15 minute(s).
4) Cumene	ACGIH (United States, 1994). Absorbed through skin. TWA: 50 ppm OSHA (United States, 1989). Absorbed through skin. TWA: 50 ppm	(Canada). Absorbed through skin. TWA: 50 ppm	EH40 (UK) (Europe). Absorbed through skin. TWA: 25 ppm 8 hour(s). EH40 (UK) (Europe, 2002). Absorbed through skin. TWA: 125 mg/m ³ 8 hour(s). STEL: 250 mg/m ³ 15 minute(s).	NOHSC (Australia, 2003). Absorbed through skin. TWA: 25 ppm 8 hour(s). STEL: 75 ppm 15 minute(s).
5) Benzene, 1,2,3-trimethyl-	ACGIH (United States, 1999). TWA: 25 ppm	(Canada). TWA: 25 ppm	ACGIH (United States, 1999). TWA: 25 ppm	ACGIH (United States, 1999). TWA: 25 ppm

9. Physical and chemical properties

- Physical state and Appearance** : Liquid.
- Density** : Not determined.
- Specific gravity** : 0.9193 @ 15.6C
- Viscosity** : 15.6 cSt at 40°C
- Auto-ignition temperature** : Not determined.
- Flash point** : Closed cup: 44°C (111.2°F) (Densky Method, Minimum)

10. Stability and reactivity

- Stability** : The product is stable.
- Materials to avoid** : Strong oxidizing and reducing agents.
- Conditions to avoid** : High temperatures, sparks, and open flames.

11. Toxicological information

- Routes of entry** : Skin, Eyes, Ingestion, and Inhalation.
- Target organs** : Contains material which may cause damage to the following organs: blood, kidneys, lungs, liver, heart, gastrointestinal tract, upper respiratory tract, immune system, skin, eyes, central nervous system (CNS).
- Acute effects**
- Inhalation** : Irritating to respiratory system.
- Ingestion** : Aspiration hazard if swallowed. Can enter lungs and cause damage. Does not meet EU R65 classification criteria.
Ingestion may cause gastrointestinal irritation and diarrhea.
- Skin contact** : Irritating to skin.
- Eye contact** : Irritating to eyes.
- Adverse effects** :
- Adverse symptoms may include the following:: In the presence of slight maternal toxicity, fetotoxic effects have been observed in the offspring of rats exposed by inhalation to Solvent Naphtha (petroleum) light aromatic.
- Adverse symptoms may include the following:: This product contains trimethylbenzene. Literature data indicate that long-term inhalation exposure causes blood effects in laboratory animals.
- Adverse symptoms may include the following:: Central nervous system, liver, kidneys, and blood effects by inhalation and heart beat irregularity (arrhythmia) and heart beat - increase. High exposures to xylene in some animal studies, often at levels toxic to the mother, affected embryo/fetal development. The significance of this finding to humans is not known. Xylene vapour has caused occupational skin sensitization in humans. When exposed to 1800 ppm Xylene vapor, rats experienced hearing deficits to mid-frequency range tones.
- Adverse symptoms may include the following:: liver, kidneys, lungs, and heart effects by dermal route and immune system effects by ingestion route. Not a developmental toxicant when administered dermally. Weak carcinogenic liver response was observed in mice, but not rats.

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA	EU
Xylene	A4	-	-	-	-	-	-

Toxicity data

Product/ingredient name	Result	Species	Dose	Exposure
Solvent naphtha (petroleum), light aromatic	LD50 Oral	Rat	8400 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
	LD50 Oral	Rat	2900 mg/kg	-
Polyether polyol	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
Benzene, 1,2,4-trimethyl-	LD50 Dermal	Rabbit	3160 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
	LD50 Oral	Rat	3400 to 6000 mg/kg	-
	LC50 Inhalation Vapor	Rat	18000 mg/m ³	4 hours
Benzene, 1,3,5-trimethyl-	LC50 Inhalation Vapor	Rat	24000 mg/m ³	4 hours
	LD50 Oral	Rat	6040 mg/kg	-
N-Propylbenzene Xylene	LD50 Dermal	Rabbit	>14100 mg/kg	-
	LD50 Oral	Rat	4300 mg/kg	-
	LD50 Oral	Rat - Male	3523 mg/kg	-
	LC50 Inhalation Vapor	Rat	5000 to 8500 ppm	4 hours
	LD50 Dermal	Rabbit	1970 mg/kg	-
2-Ethyl hexanol	LD50 Dermal	Rabbit	1700 mg/kg	-
	LD50 Oral	Rat	2000 to 5000 mg/kg	-
	LD50 Oral	Mouse	2000 to 3800 mg/kg	-
	LC50 Inhalation Vapor	Rat	>227 ppm	6 hours
	LD50 Dermal	Rabbit	10578 mg/kg	-
	LD50 Oral	Mouse	12750 mg/kg	-

LC50 Inhalation Rat 8000 ppm 4 hours
Vapor

Other information : Not available.










12. Ecological information

Environmental hazards : Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment. Based on calculation.
 Environmental fate : This product contains components which may be persistent in the environment.

13. Disposal considerations

Waste handling and disposal : Waste must be disposed of in accordance with federal, state and local environmental control regulations.

14. Transport information

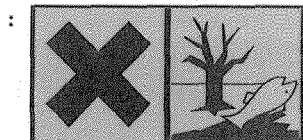
Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	NA1993	Combustible liquids, n.o.s. (Xylene, Petroleum distillates)	Combustible liquid.	III		-
TDG Classification	UN1993	Flammable liquid, n.o.s. (Xylene, Petroleum distillates)	3	III		-
ADR/RID Class	UN1993	Flammable liquid, n.o.s. (Xylene, Petroleum distillates)	3	III	 	Hazard identification number 30 Special provisions 640 (E) Tunnel code (D/E)
IMDG Class	UN1993	Flammable liquid, n.o.s. (Xylene, Petroleum distillates)	3	III	 	- Marine pollutant
IATA-DGR Class	UN1993	Flammable liquid, n.o.s. (Xylene, Petroleum distillates)	3	III	 	-
ADG Class	UN1993	Flammable liquid, n.o.s. (Xylene, Petroleum distillates)	3	III	 	-

Notice to reader

The above transport information is provided to assist in the proper classification of this product and may not be suitable for all shipping conditions.

15. Regulatory information**EU regulations**

Hazard symbol(s)



Irritant, Dangerous for the environment

Risk phrases

: R10- Flammable.
 R36/37/38- Irritating to eyes, respiratory system and skin.
 R67- Vapors may cause drowsiness and dizziness.
 R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases	: S16- Keep away from sources of ignition - No smoking. S23- Do not breathe vapor. S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. S57- Use appropriate containment to avoid environmental contamination.	
Contains	: Solvent naphtha (petroleum), light aromatic	265-199-0
Additional warning phrases	: Contains Butanedioic acid, (tetrapropenyl)-. May produce an allergic reaction.	
US regulations		
SARA 313 toxic chemical notification and release reporting (w/w%)	: Benzene, 1,2,4-trimethyl-Xylene Cumene	10 - 19.9 1 - 4.9 1 - 4.9
SARA 311/312 Hazardous Categorization	: SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard	
RQ (Reportable quantity)	: CERCLA: Hazardous substances.: Xylene: 100 lbs. (45.4 kg); CUMENE: 5000 lbs. (2270 kg); Ethylbenzene: 1000 lbs. (454 kg); Naphthalene: 100 lbs. (45.4 kg); STYRENE: 1000 lbs. (454 kg); Toluene: 1000 lbs. (454 kg); Benzene: 10 lbs. (4.54 kg); P-XYLENE: 100 lbs. (45.4 kg); o-XYLENE: 1000 lbs. (454 kg); Acetaldehyde: 1000 lbs. (454 kg); FURAN: 100 lbs. (45.4 kg); Propylene oxide: 100 lbs. (45.4 kg); MALEIC ANHYDRIDE: 5000 lbs. (2270 kg);	
State - California Prop. 65	: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Cumene Naphthalene Ethylbenzene Toluene Benzene Furan Propylene oxide Acetaldehyde	
EPA Significant New Use Rule (SNUR)	: Polyolefin alkyl phenol alkyl amine	United States - TSCA 5(a)2 - Proposed significant new use rules
Canadian regulations		
WHMIS (Classification)	: Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). Class D-2B: Material causing other toxic effects (Toxic).	
International Inventory Status		
United States inventory (TSCA 8b)	: All components are listed or exempted.	
Canada inventory	: All components are listed or exempted.	
Europe inventory	: All components are listed or exempted.	
Japan inventory (ENCS)	: All components are listed or exempted.	
Australia inventory (AICS)	: All components are listed or exempted.	
Korea inventory (KECI)	: All components are listed or exempted.	
China inventory (IECSC)	: All components are listed or exempted.	
Philippines inventory (PICCS)	: All components are listed or exempted.	

16. Other information

PREPARATION INFORMATION

Validated by HS&E Department (Tel: +1 804 788 5800) on 4/19/2011.

Date of printing : 4/19/2011.

Indicates information that has changed from previously issued version.

Notice to reader

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. Afton makes no representation as to completeness or accuracy. In no event will Afton be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.

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Full text of R-phrases appearing in section 3:

: R10- Flammable.
R20- Harmful by inhalation.
R20/21- Harmful by inhalation and in contact with skin.
R65- Harmful: may cause lung damage if swallowed.
R37- Irritating to respiratory system.
R38- Irritating to skin.
R36/38- Irritating to eyes and skin.
R37/38- Irritating to respiratory system and skin.
R36/37/38- Irritating to eyes, respiratory system and skin.
R66- Repeated exposure may cause skin dryness or cracking.
R67- Vapors may cause drowsiness and dizziness.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

*** END OF MSDS ***

MATERIAL SAFETY DATA SHEET

MSDS Number: 400454M - 1

24 Hour Emergency Assistance: CHEMTEL

(877) 276-7283

General Assistance Number: (877)

276-7285

SECTION 1 PRODUCT IDENTIFICATION

MATERIAL IDENTITY: RBOB - Sewaren

COMPANY ADDRESS: Motiva Enterprises, LLC, P.O. Box 4540, Houston, TX. 77210-4540

SECTION 2 PRODUCT/INGREDIENTS

INGREDIENTS	CAS#	CONCENTRATION
Gasoline (Conventional, CARB and RFG)	Mixture	100 %volume
Miscellaneous Hydrocarbons	Mixture	0 - 50 %volume
Xylene, mixed isomers	1330-20-7	0 - 25 %volume
Toluene	108-88-3	0 - 25 %volume
1,2,4-Trimethyl Benzene (Pseudocumene)	95-63-6	0 - 5 %volume
Styrene	100-42-5	0 - 4 %volume
Benzene	71-43-2	0 - 4 %volume
Ethyl Benzene	100-41-4	0 - 3 %volume
Hexane	110-54-3	0 - 3 %volume
Cyclohexane	110-82-7	0 - 1 %volume
Naphthalene	91-20-3	0 - 1 %volume
Methyl Tert-Butyl Ether (MTBE)	1634-04-4	0 - 15 %volume
Ethyl Tert-Butyl Ether (ETBE)	637-92-3	0 - 18.5 %volume
Tert-Amyl Methyl Ether (TAME)	994-05-8	0 - 18.6 %volume
Diisopropyl Ether (DIPE)	108-20-3	0 - 2 %volume

NOTE: Content of Gasoline components will vary; Individual components may be present from trace amounts up to the maximum shown.

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance & Odor: Bronze color, clear & bright liquid. Hydrocarbon odor.

Health Hazards: May be harmful or fatal if swallowed. Do not induce vomiting. May cause aspiration pneumonitis. May cause CNS depression.

Physical Hazards: Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

Hazard Rating: Least - 0 Slight - 1 Moderate - 2 High - 3 Extreme - 4

Inhalation:

May cause irritation to the nose, throat and respiratory tract. Breathing of high vapor concentrations may cause CNS depression, evidenced by dizziness, light-headedness, headache, nausea, drowsiness, and loss of

coordination. Continued inhalation may result in unconsciousness.

Eye Irritation:

May be irritating to the eyes causing a burning sensation, redness, swelling and/or blurred vision.

Skin Contact:

May be irritating to the skin causing a burning sensation, redness and/or swelling. Prolonged or repeated skin contact can cause defatting and drying of the skin which may result in a burning sensation and a dried, cracked appearance.

Ingestion:

This material may be harmful or fatal if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Generally considered to have a low order of acute oral toxicity.

Other Health Effects:

Carcinogenic in animal tests. Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant. It is probable that the material causes cancer in laboratory animals. Material may adversely effect male reproductive performance based on testing in laboratory animals.

This material and/or components may cause the following effects:

Developmental Toxicity, Genotoxicity, Immunotoxicity, Reproductive Toxicity

Primary Target Organs:

The following organs and/or organ systems may be damaged by overexposure to this material and/or its components.

Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver, Nervous System

Signs and Symptoms:

Irritation as noted above. Aspiration pneumonitis may be evidenced by coughing, labored breathing and cyanosis (bluish skin); in severe cases death may occur. Damage to blood-forming organs may be evidenced by: a) easy fatigability and pallor (RBC), b) decreased resistance to infection (WBC effect), c) excessive bruising and bleeding (platelet effect). Kidney damage may be indicated by changes in urine output or appearance, pain upon urination or in the lower back or general edema (swelling from fluid retention). Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye color), fatigue and sometimes pain and swelling in the upper right abdomen.

For additional health information, refer to section 11.

SECTION 4	FIRST AID MEASURES
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Inhalation:

Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin:

Remove contaminated clothing. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye:

Flush eyes with large amounts of water for at least 15 minutes. If redness, burning, blurred vision or swelling persist, transport to nearest medical facility for additional treatment.

Ingestion:

DO NOT take internally. DO NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. In general no treatment is necessary unless large

quantities are swallowed, however, get medical advice. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Note to Physician:

If more than 2.0ml/kg body weight has been ingested and vomiting has not occurred, emesis should be induced with supervision. Keep victim's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions, or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

SECTION 5	FIRE FIGHTING MEASURES
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Flash Point [Method]: -40 °F/-40 °C [Tagliabue Closed Cup]

Flammability in Air: 1.3 - 7.6 %volume

Extinguishing Media:

Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

Fire Fighting Instructions:

DANGER! EXTREMELY FLAMMABLE. Clear fire area of all non-emergency personnel. Only enter confined fire space with full bunker gear, including a positive pressure, NIOSH-approved, self-contained breathing apparatus. Cool surrounding equipment, fire-exposed containers and structures with water. Container areas exposed to direct flame contact should be cooled with large quantities of water (500 gallons water per minute flame impingement exposure) to prevent weakening of container structure.

Unusual Fire Hazards:

Vapors are heavier than air accumulating in low areas and traveling along the ground away from the handling site. Do not weld, heat or drill on or near container. However, if emergency situations require drilling, only trained emergency personnel should drill.

SECTION 6	ACCIDENTAL RELEASE MEASURES
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Protective Measures:

DANGER! EXTREMELY FLAMMABLE! Eliminate potential sources of ignition. Handling equipment must be bonded and grounded to prevent sparking.

Spill Management:

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

Reporting:

CERCLA: Product is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) petroleum exclusion. Releases to air, land, or water are not reportable under CERCLA (Superfund).

CWA: This product is an oil as defined under Section 311 of EPA's Clean Water Act (CWA). Spills into or leading to surface waters that cause a sheen must be reported to the National Response Center, 1-800-424-8802.

SECTION 7	HANDLING AND STORAGE
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Precautionary Measures:

Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet. Launder contaminated clothing before reuse. Properly dispose of contaminated leather articles such as shoes or belts that cannot be decontaminated. Avoid heat, open flames, including pilot lights, and strong oxidizing agents. Use

explosion-proof ventilation to prevent vapor accumulation. Ground all handling equipment to prevent sparking. Do not siphon gasoline by mouth; harmful or fatal if swallowed. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

For use as a motor fuel only. Do not use as a cleaning solvent or for other non-motor fuel uses.

Handling:

Surfaces that are sufficiently hot may ignite liquid material. Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

Keep containers closed when not in use. **WARNING!** The flow of gasoline through the pump nozzle can produce static electricity, which may cause a fire if gasoline is pumped into an ungrounded container. To avoid static buildup, place approved container on the ground. Do not fill container in vehicle or truck bed. Keep nozzle in contact with container while filling. Do not use automatic pump handle (latch-open) device. Turn off all battery operated portable electronic devices (examples include: cellular phones, pagers and CD players) before operating gasoline pump. Use only with adequate ventilation.

Storage:

Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures.

Keep liquid and vapor away from heat, sparks and flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors have dissipated. Use explosion-proof ventilation to prevent vapor accumulation while in use.

Container Warnings:

Keep containers closed when not in use. Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

SECTION 8	EXPOSURE CONTROLS/PERSONAL PROTECTION
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Chemical	Limit	TWA	STEL	Ceiling	Notation
Benzene	ACGIH TLV	0.5 ppmv	2.5 ppmv		Skin
Benzene	OSHA PEL	1 ppmv	5 ppmv		
Cyclohexane	ACGIH TLV	300 ppmv			
Cyclohexane	OSHA PEL	300 ppmv			
Ethyl Benzene	ACGIH TLV	100 ppmv	125 ppmv		
Ethyl Benzene	OSHA PEL	100 ppmv			
Ethyl Benzene	OSHA PEL - 1989(revoked)	100 ppmv	125 ppmv		
Gasoline	ACGIH TLV	300 ppmv	500 ppmv		
Gasoline	OSHA PEL - 1989(revoked)	300 ppmv	500 ppmv		
Isopropyl ether	ACGIH TLV	250 ppmv	310 ppmv		
Isopropyl ether	OSHA PEL	500 ppmv			
Methyl T-Butyl Ether	ACGIH TLV	40 ppmv			
N-Hexane	OSHA PEL	50 ppmv			
N-Hexane	OSHA PEL - 1989(revoked)	50 ppmv			
Naphthalene	ACGIH TLV	10 ppmm	15 ppmm		
Naphthalene	OSHA PEL	10 ppmv			
Naphthalene	OSHA PEL - 1989(revoked)	10 ppmv	15 ppmv		
Styrene	ACGIH TLV	20 ppmv	40 ppmv		

Styrene	OSHA PEL	100 ppmv		200 ppmv	
Styrene	OSHA PEL - 1989(revoked)	50 ppmv	100 ppmv		
Styrene, monomer	SHELL PEL - 1989(revoked)	50 ppmv	100 ppmv		Embryo-Fetus Policy
Toluene	ACGIH TLV	50 ppmv			Skin
Toluene	OSHA PEL	200 ppmv		300 ppmv	
Toluene	OSHA PEL - 1989(revoked)	100 ppmv	150 ppmv		
Toluene	SHELL SIS	50 ppmv			
Trimethyl Benzene	ACGIH TLV	25 ppmv			
Trimethyl Benzene	OSHA PEL - 1989(revoked)	25 ppmv			
Trimethyl Benzene	SHELL PEL - 1989(revoked)	25 ppmv			
xylene (o-, m-, p- isomers)	OSHA PEL	100 ppmv			
xylene (o-, m-, p- isomers)	OSHA PEL - 1989(revoked)	100 ppmv	150 ppmv		
Xylene (o-, m-, p-isomers)	ACGIH TLV	100 ppmv	150 ppmv		

Exposure Controls

Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.

Personal Protection

Personal protective equipment (PPE) selections vary based on potential exposure conditions such as handling practices, concentration and ventilation. Information on the selection of eye, skin and respiratory protection for use with this material is provided below.

Eye Protection:

Chemical Goggles - If liquid contact is likely.

Skin Protection:

Use protective clothing which is chemically resistant to this material. Selection of protective clothing depends on potential exposure conditions and may include gloves, boots, suits and other items. The selection(s) should take into account such factors as job task, type of exposure and durability requirements.

Published literature, test data and/or glove and clothing manufacturers indicate the best protection is provided by: Neoprene, or Nitrile Rubber, or Polyvinyl Alcohol (PVA)

Respiratory Protection:

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Types of respirator(s) to be considered in the selection process include:

Supplied-Air Respirator. Air-Purifying Respirator for Organic Vapors. Self-contained breathing apparatus.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Bronze color, clear & bright liquid. Hydrocarbon odor.

Substance Chemical Family: Hydrocarbon

Flammability in Air	1.3 - 7.6 %volume	Flash Point	-40 °F [Tagliabue Closed Cup]
Freezing Point	-72 °F	Solubility (in Water)	Negligible
Specific Gravity	0.72 - 0.76	Stability	Stable
Vapor Density	3.5	Vapor Pressure	7 - 14.5 mmHg [Reid]
Viscosity	< 1.4 cSt Typical @ 100 °F	Volatility	100 %volume

SECTION 10

REACTIVITY AND STABILITY

Stability:

Material is stable under normal conditions.

Conditions to Avoid:

Avoid heat, sparks, open flames and other ignition sources.

Materials to Avoid:

Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products:

Thermal decomposition products are highly dependent on combustion conditions. A complex mixture of airborne solids, liquids and gases will evolve when this material undergoes pyrolysis or combustion. Aldehydes, Carbon Monoxide, Carbon Dioxide, Peroxide, Styrene oxide and other unidentified organic compounds may be formed upon combustion.

SECTION 11

TOXICOLOGICAL INFORMATION

Acute Toxicity

TEST	Result	OSHA Classification	Material Tested
Dermal LD50	>2 g/kg(Rabbit)	Non-Toxic	Based on similar material(s)
Eye Irritation	Moderate to Severe Irritation [Human]	Irritating	Based on similar material(s)
Oral LD50	>5 g/kg(Rat)	Non-Toxic	Based on similar material(s)
Skin Irritation Draize	0.98 [Rabbit, 24 HOUR(S)]	Irritating	Based on similar material(s)

Carcinogenicity:

Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant.

Carcinogenicity Classification

Chemical Name	NTP	IARC	ACGIH	OSHA
Gasoline (Conventional, CARB and RFG)		Possible Carcinogen (2B)	A3	Yes
Benzene	Yes	Carcinogen (1)	A1	Yes
Ethyl Benzene		Possible Carcinogen (2B)		
Methyl Tert-Butyl Ether (MTBE)			A3	
Naphthalene			A4	
Styrene		Possible	A4	

		Carcinogen (2B)		
Toluene		Not Classifiable (3)	A4	

Toxic Effects - Equiva Gasoline MSDS

Carcinogenicity	Chronic inhalation of wholly vaporized gasoline produced kidney tumors in male rats and liver tumors in female mice. The kidney tumors have been shown to develop through a unique mechanism involving Alpha-2u globulin. This protein is not present in humans making the kidney tumors irrelevant to potential human health risks. Origin of the female mouse liver tumors is less understood, leaving their significance for human risks uncertain. Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs, is associated with anemia (depletion of blood cells) and is linked to the later development of acute myelogenous leukemia (AML) in humans. A recent chronic bioassay of ethylbenzene by the NTP produced clear evidence of carcinogenicity in male rats based on kidney tumor increase. Other animal tumors possibly associated with ethylbenzene include testicular adenomas in male rats, kidney tumors in female rats, lung tumors in male mice and liver tumors in female mice. Toluene is not known to be mutagenic or carcinogenic although available human and experimental animal data are limited and insufficient to assess carcinogenic potential. Chronic inhalation of MTBE produced liver tumors in female mice and kidney tumors in male rats. These tumors are of questionable relevance to humans and further studies are being done to address their significance.
Cardiovascular System	While there is no evidence that workplace exposure to acceptable levels of toluene vapors (e.g., the TLV) have produced cardiac effects in humans, high concentrations may cause cardiac sensitization and sudden lethality has been reported from habitual sniffing of solvents or glue. Animal studies have confirmed the sensitizing effects. Sensitization may lead to fatal changes in heart rhythms. Hypoxia or injection of adrenalin-like agents may enhance this effect. Thickening of heart blood vessels has been reported in animals exposed to xylene.
Developmental Toxicity	Daily exposure of pregnant rats to unleaded gasoline vapor at concentrations up to 9000 ppm resulted in no detectable maternal or developmental toxicity. Numerous studies of benzene in experimental animals have failed to detect teratogenic effects (birth defects) even at doses of benzene toxic to the mothers. There is some evidence of fetal toxicity, but not malformations, in mice and rabbits exposed to 500 ppm and higher concentrations of benzene vapor during gestation. Ethylbenzene caused birth defects in rats but not rabbits at doses that produced toxic effects in the mothers. n-Hexane produced fetal toxicity, reduced fetal weight, in mice at maternally toxic doses. Developmental toxicity studies of xylenes showed embryo/lethal/toxic and teratogenic effects with maternal toxicity. Many case studies involving abuse during pregnancy implicate toluene as a developmental toxicant. Studies in laboratory animals have shown developmental effects comparable to those reported in humans, but the effects were generally associated with maternal toxicity. Exposing pregnant mice to maternally toxic MTBE levels greater than 1000 ppm produced adverse gestational and developmental effects including malformations. No developmental toxicity was seen in rabbits exposed to MTBE concentrations up to 8000 ppm. Birth defects in mice and fetotoxicity in both rats and mice were observed following maternally toxic TAME exposures. Exposure of pregnant rats to high concentrations of DIPE (3095 and 6745 ppm) by inhalation during pregnancy increased the frequency of rudimentary 14th ribs in the offspring. The effect was not seen following exposure to 430 ppm DIPE. The significance of this finding is not known.
Genotoxicity	Unleaded gasoline was tested for genetic activity in tests using microbial cells, cultured mammalian cells and rats (bone marrow) and was judged to be negative in every case. Benzene has been shown to be non-mutagenic or weakly mutagenic in a variety of in vitro (test tube) systems. It has, however, been found to cause other types of chromosome damage (micronuclei, chromosome breakage, non-dysjunctional events) in both laboratory animals and workers exposed to high doses of benzene. These effects appear to be related to one or more metabolites of benzene, possibly acting in combination. Benzene metabolites can also bind to proteins forming detectable complexes (adducts). There is limited evidence of binding to the genetic material (DNA) itself. The relationship of these effects to the causation of leukemia or tumors in experimental animals is unknown. Changes in chromosomes of lymphocytes have been identified in some studies of humans exposed to styrene. The significance of these changes is not known, and other such studies have produced negative results. Chromosomal breaks have been reported in the bone marrow cells of rats exposed to styrene by inhalation along with increased frequency of sister chromatid exchanges in alveolar macrophages, bone marrow cells and regenerating liver cells. Ethylbenzene was not mutagenic in a number of in vitro procedures. Naphthalene was negative in Ames mutagenicity and rat cell transformation assays. Cyclohexane and pseudocumene were also negative in Ames testing. Toluene was negative in the Ames assay and negative for chromosomal aberrations and sister-chromatid exchanges in human lymphocytes and in an in vitro test using hamster cells. Mouse lymphoma test results for toluene were inconclusive. MTBE was negative in several mutagenicity tests, but was positive in a mouse lymphoma test.
Blood/Blood Forming Organs	Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs and is associated with anemia (depletion of blood cells). Repeated exposure of rabbits to high cyclohexane vapor concentrations causes a slight increase in blood clotting time. Blood effects were seen in rats following prolonged and repeated oral exposure to a mixture of xylenes containing ethylbenzene.
Immunotoxicity	Various studies of workers exposed to high levels of benzene have found impairment of both humoral (antibody) and

	cellular immunity, most notably a decrease in levels of circulating leukocytes. Many of these exposures also involve other solvents and chemicals. Animal studies with high benzene doses have reported similar effects.
Kidney	Long-term inhalation of wholly vaporized gasoline caused increased kidney weight and progressive nephropathy (tissue damage) in male rats. In rats exposed orally to a xylene mixture also containing ethylbenzene, males developed hyaline droplet changes and females showed evidence of early chronic nephropathy. Intentional abuse of toluene vapors by 'glue-sniffers' has been associated with damage to the kidneys. Long term inhalation of up to 8000 ppm MTBE vapor produced a chronic, progressive nephropathy (kidney damage) in male rats. This effect may be related to the accumulation of alpha-2u globulin and therefore specific to the male rat. (See Carcinogenicity) Increased kidney weights without evidence of tissue injury were reported in rats exposed to high, inhaled doses of TAME. Prolonged inhalation of DIPE (90 days or longer) increased kidney weights in both male and female rats. In male rats exposed to the highest concentration (7100 ppm) there was also evidence of microscopic changes (hyaline droplets) in the kidney tubules resembling those produced by exposure to gasoline.
Liver	Inhalation of gasoline vapor increased liver weights, urinary excretion of ascorbic acid, and hepatic enzyme activity in male rats. Liver weight increases were seen in rats dosed orally for 90 days with a xylene mixture also containing ethylbenzene. Reversible liver damage has been reported in persons exposed to toluene by solvent abuse. Liver weight increases without evidence of tissue injury were seen in rats exposed to greater than 500 ppm TAME by inhalation for four weeks. Prolonged inhalation of DIPE (90 days or longer) increased liver weights in both rats and rabbits. In rabbits and in male rats exposed to 7100 ppm there was also evidence of microscopic changes in the liver tissue.
Nervous System	Inhalation of MTBE vapors at high concentrations (above 800 ppm) induced reversible central nervous system depression in rats. Inhalation of TAME at concentrations greater than 250 ppm produced reversible sedation in rats and mice.
Neurotoxicity	Inhalation exposure to high n-hexane concentrations has resulted in peripheral neuropathy in rodents and also in human workers. Rats receiving prolonged and repeated exposure to high doses of xylene have shown hearing loss. Prolonged and repeated exposures to high toluene concentrations (mixed solvent) have resulted in hearing loss in laboratory animals. There have also been reports of hearing damage in humans overexposed to toluene and other solvents, however, these effects and their possible relationship to noise exposure remain uncertain. Intentional inhalation ('glue-sniffing') and resulting overexposure to toluene vapors has been linked to brain injury. Rats exposed repeatedly to high concentrations of styrene vapor also developed hearing deficits.
Reproductive Toxicity	Inhalation of high n-hexane concentrations resulted in testicular and epididymal lesions in laboratory animals. Animal studies on benzene have shown testicular effects and alteration in reproductive cycles.
Sensitization	Gasoline and component petroleum streams blended to produce it were tested in animal studies and found not to cause skin sensitization.
Systemic Toxicity	Studies on n-hexane in laboratory animals have shown mild, transitory effects on the spleen and blood (white blood cells) and evidence of nasal tract and lung damage. Chronic exposure to vapors of a mixture containing 50% pseudocumene (and possibly contaminated with benzene) caused decreased weight gain and blood changes (lymphopenia and neutrophilia), liver, lung, spleen, kidney, and bone marrow effects in rats. Microscopic changes in the lung, including congestion, hemorrhage, edema, exudation, and leukocyte infiltration were observed in rats and guinea pigs following acute inhalation of styrene. In fatally exposed animals, pulmonary congestion, edema, and necrosis of the kidney and liver were reported. Repeated exposure to high vapor concentrations of cyclohexane caused minor microscopic liver and kidney changes in rabbits. Laboratory animals exposed to prolonged and repeated doses of xylenes by various routes have shown effects in liver, kidneys, lungs, spleen, heart, blood and adrenals.

SECTION 12

ECOLOGICAL INFORMATION

Environmental Impact Summary:

There is no ecological data available for this product.

SECTION 13

DISPOSAL CONSIDERATIONS

RCRA Information:

If this material, as it is originally purchased, were subsequently DISCARDED as a waste, the waste would be a RCRA hazardous waste.

D001 (Ignitable Hazardous Waste) D018 (Toxicity, Benzene > 0.5 mg/l)

Under RCRA, it is the responsibility of the user of the material to determine, at the time of the disposal, whether the material meets RCRA criteria for hazardous waste. This is because material uses, transformations, mixtures, processes, etc. may affect the classification. Refer to the latest EPA, state and local regulations regarding proper disposal.

SECTION 14

TRANSPORT INFORMATION

US Department of Transportation Classification

Proper Shipping Name: Gasoline
Identification Number: UN1203
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II
Marine Pollutant % of Total: 100 %weight
Marine Pollutant: Marine Pollutant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.
Oil: Per 49 CFR 130.5, containers of 3500 gallon capacity or greater transported by road or rail are excepted from 49 CFR 172.303(L)(2) if shipping papers contain the word 'OIL'; exceptions are not applicable to shipments by water.
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SECTION 15

REGULATORY INFORMATION

Federal Regulatory Status

OSHA Classification:

Product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 19.10.1200.

Ozone Depleting Substances (40 CFR 82 Clean Air Act):

This material does not contain nor was it directly manufactured with any Class I or Class II ozone depleting substances.

Superfund Amendment & Reauthorization Act (SARA) Title III:

There are no components in this product on the SARA 302 list.

SARA Hazard Categories (311/312):

Immediate Health	Delayed Health	Fire	Pressure	Reactivity
YES	YES	YES	NO	NO

SARA Toxic Release Inventory (TRI) (313):

Xylene (mixed isomers), Styrene, 1,2,4-Trimethylbenzene, Toluene, Naphthalene, Methyl Tert-Butyl Ether, N-Hexane, Ethylbenzene, Cyclohexane, Benzene

Toxic Substances Control Act (TSCA) Status:

All component(s) of this material is(are) listed on the EPA/TSCA Inventory of Chemical Substances.

Other Chemical Inventories:

Australian AICS, Chinese Inventory, European EINECS, Japan ENCS, Korean Inventory, Philippines PICCS

State Regulation

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65):

The chemical identified with this code, Reproductive Toxin is known to the state of California to cause birth defects or other reproductive harm. The chemical identified with this code, Carcinogen & Reproduction Toxin, is known to the state of California to cause both cancer and birth defects or other reproductive harm.

Benzene (71-43-2)	0 - 4 %volume	Carcinogen/Reproduction
Toluene (108-88-3)	0 - 25 %volume	Reproduction

New Jersey Right-To-Know Chemical List:

Benzene (71-43-2)	0 - 4 %volume	Carcinogen
Benzene (71-43-2)	0 - 4 %volume	Mutagen
Benzene, Methyl- (108-88-3)	0 - 25 %volume	
Cyclohexane (110-82-7)	0 - 1 %volume	
Ethylbenzene (0851)	0 - 3 %volume	
Methyl Tert-Butyl Ether (1634-04-4)	0 - 15 %volume	
Naphthalene (1322)	0 - 1 %volume	
Propane, 2,2'-oxybis- (108-20-3)	0 - 2 %volume	
Styrene (100-42-5)	0 - 4 %volume	Mutagen
Xylenes (1330-20-7)	0 - 25 %volume	

Pennsylvania Right-To-Know Chemical List:

Benzene (71-43-2)	0 - 4 %volume	Spec Haz Sub/Env Hazardous
Benzene, dimethyl- (1330-20-7)	0 - 25 %volume	Environmental Hazard
Benzene, ethenyl (100-42-5)	0 - 4 %volume	Environmental Hazard
Benzene, Ethyl- (100-41-4)	0 - 3 %volume	Environmental Hazard
Benzene, Methyl- (108-88-3)	0 - 25 %volume	Environmental Hazard
Cyclohexane (110-82-7)	0 - 1 %volume	Environmental Hazard
Methyl Tert-Butyl Ether (1634-04-4)	0 - 15 %volume	Environmental Hazard
Naphthalene (91-20-3)	0 - 1 %volume	Environmental Hazard
Propane, 2,2'-oxybis- (108-20-3)	0 - 2 %volume	

SECTION 16

OTHER INFORMATION

Revision#: 1**Revision Date:** 10/11/2000**Revisions since last change (discussion):** This Material Safety Data Sheet has been changed to include new information on the potential carcinogenicity of component Ethylbenzene and to add Diisopropyl Ether (DIPE) as a

component. We encourage you to take the opportunity to reread the sheet and review the information contained. Changes have occurred in the following Sections: 2, 11, 15.

SECTION 17

LABEL INFORMATION

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

RBOB - Sewaren

DANGER!

EXTREMELY FLAMMABLE. VAPORS MAY EXPLODE. OVEREXPOSURE TO VAPORS CAN CAUSE CNS DEPRESSION. MAY CAUSE SKIN AND EYE IRRITATION. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS BENZENE WHICH IS A CANCER HAZARD - LINKED TO DEVELOPMENT OF ACUTE MYELOGENOUS LEUKEMIA. LONG-TERM EXPOSURE TO GASOLINE VAPORS HAS CAUSED CANCER IN LABORATORY ANIMALS. PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE OIL ACNE OR DERMATITIS.

MAY CAUSE DAMAGE TO: Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver, Nervous System

Precautionary Measures: Avoid heat, sparks, open flames and other ignition sources. Do not take internally. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Keep container closed when not in use. Wash thoroughly after handling.

FIRST AID

Inhalation: Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin Contact: Remove contaminated clothing. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye Contact: Flush eyes with large amounts of water for at least 15 minutes. If redness, burning, blurred vision or swelling persist, transport to nearest medical facility for additional treatment.

Ingestion: DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

FIRE

In case of fire, Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

SPILL OR LEAK

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

CONTAINS: Miscellaneous Hydrocarbons, Mixture; Xylene, mixed isomers, 1330-20-7; Toluene, 108-88-3; 1,2,4-Trimethyl Benzene (Pseudocumene), 95-63-6; Styrene, 100-42-5; Benzene, 71-43-2; Ethyl Benzene, 100-41-4; Hexane, 110-54-3; Cyclohexane, 110-82-7; Naphthalene, 91-20-3; Methyl Tert-Butyl Ether (MTBE), 1634-04-4; Ethyl Tert-Butyl Ether (ETBE), 637-92-3; Tert-Amyl Methyl Ether (TAME), 994-05-8; Diisopropyl Ether (DIPE), 108-20-3

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

TRANSPORTATION

US Department of Transportation Classification

Proper Shipping Name: Gasoline
Identification Number: UN1203
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II
Marine Pollutant % of Total: 100 %weight
Marine Pollutant: Marine Pollutant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.
Oil: Per 49 CFR 130.5, containers of 3500 gallon capacity or greater transported by road or rail are excepted from 49 CFR 172.303(L)(2) if shipping papers contain the word 'OIL'; exceptions are not applicable to shipments by water.
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CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flames or heat. Keep container closed and drum bungs in place.

Name and Address
Motiva Enterprises, LLC
P.O. Box 4540
Houston, TX 77210-4540

TRANSPORTATION EMERGENCY CHEMTEL (877) 276-7283

HEALTH EMERGENCY CHEMTEL (877) 276-7283

ADMINISTRATIVE INFORMATION

COMPANY ADDRESS: Motiva Enterprises, LLC, P.O. Box 4540, Houston, TX. 77210-4540
Company Product Stewardship & Regulatory Compliance Contact: Ken Darmer
Phone Number: (281) 874-7982
MSDS FAX-BACK Phone Number: (877) 276-7285

THE INFORMATION CONTAINED IN THIS DATA SHEET IS BASED ON THE DATA AVAILABLE TO US AT THIS TIME, AND IS BELIEVED TO BE ACCURATE BASED UPON THAT DATA. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT, FOR PURPOSE OF HAZARD COMMUNICATION. IT IS NOT INTENDED TO CONSTITUTE PRODUCT PERFORMANCE INFORMATION, AND NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND IS MADE WITH RESPECT TO THE PRODUCT, UNDERLYING DATA OR THE INFORMATION CONTAINED HEREIN. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL PRODUCTS YOU BUY,

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Material Safety Data Sheet**1. MATERIAL AND COMPANY IDENTIFICATION**

Material Name : **BR Reformulated Gasoline with EtOH**
Uses : Fuel for spark ignition engines designed to run on unleaded fuel.

Manufacturer/Supplier : **Motiva Enterprises LLC**
PO BOX 4540
Houston, TX 77210-4540
USA

MSDS Request : 877-276-7285

Emergency Telephone Number
Spill Information : 877-242-7400
Health Information : 877-504-9351

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Identity	CAS No.	Concentration
Gasoline		90.00 - 100.00 %
Ethanol	64-17-5	0.00 - 10.00 %

Contains Alkanes, Cycloalkanes, Alkenes and Aromatic Hydrocarbons, Mixture.

Contains 1,2,4 Tri-methyl-benzene, CAS# 95-63-6.

Contains Styrene, CAS # 100-42-5.

Contains Benzene, CAS # 71-43-2.

Contains Toluene, CAS # 108-88-3.

Contains Ethylbenzene, CAS # 100-41-4.

Contains n-Hexane, CAS # 110-54-3.

Contains Xylene (Mixed Isomers), CAS # 1330-20-7.

Contains Naphthalene, CAS # 91-20-3.

Contains Cyclohexane, CAS# 110-82-7.

3. HAZARDS IDENTIFICATION

Emergency Overview	
Appearance and Odour	: Bronze. Clear, bright liquid. Hydrocarbon.
Health Hazards	: Harmful: may cause lung damage if swallowed. Irritating to skin. Vapours may cause drowsiness and dizziness. A component or components of this material may cause cancer. This product contains benzene which may cause leukaemia (AML - acute myelogenous leukaemia). May cause MDS (Myelodysplastic Syndrome).
Safety Hazards	: Extremely flammable. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Electrostatic charges may be generated during handling. Electrostatic discharge may cause fire.
Environmental Hazards	: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Material Safety Data Sheet**Health Hazards****Inhalation**

: Vapours may cause drowsiness and dizziness. Slightly irritating to respiratory system.

Skin Contact

: Irritating to skin.

Eye Contact

: Moderately irritating to eyes.

Ingestion

: Harmful: may cause lung damage if swallowed.

Other Information

: Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s): Blood-forming organs. Peripheral nervous system.

May cause heritable genetic damage. Possible risk of harm to the unborn child. A component or components of this material may cause cancer. This product contains benzene which may cause leukaemia (AML - acute myelogenous leukaemia). May cause MDS (Myelodysplastic Syndrome).

Signs and Symptoms

: Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death. Damage to blood-forming organs may be evidenced by: a) fatigue and anemia (RBC), b) decreased resistance to infection, and/or excessive bruising and bleeding (platelet effect). Peripheral nerve damage may be evidenced by impairment of motor function (incoordination, unsteady walk, or muscle weakness in the extremities, and/or loss of sensation in the arms and legs). Eye irritation signs and symptoms may include a burning sensation and a temporary redness of the eye. Auditory system effects may include temporary hearing loss and/or ringing in the ears.

Aggravated Medical Conditions

: Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Blood-forming organs. Peripheral nervous system. Skin.

Environmental Hazards

: Toxic to aquatic organisms. May cause long-term adverse effects in the environment. Unlike other gasoline components, ethanol is miscible with water.

Additional Information

: This product is intended for use in closed systems only.

4. FIRST AID MEASURES**Inhalation**

: Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

Skin Contact

: Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling,

Material Safety Data Sheet

	pain and/or blisters occur, transport to the nearest medical facility for additional treatment. When using high pressure equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop.
Eye Contact	: Flush eyes with water while holding eyelids open. Rest eyes for 30 minutes. If redness, burning, blurred vision, or swelling persist transport to the nearest medical facility for additional treatment.
Ingestion	: If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing.
Advice to Physician	: Treat symptomatically. Persons on disulfiram (Antabuse®) therapy should be aware that the ethyl alcohol in this product is hazardous to them just as is alcohol from any source. Disulfiram reactions (vomiting, headache and even collapse) may follow ingestion of small amounts of alcohol and have also been described from skin contact.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Flash point	: -40 °C / -40 °F (ASTM D-93 / PMCC)
Upper / lower Flammability or Explosion limits	: 1.3 - 7.6 %(V)
Auto ignition temperature	: > 250 °C / 482 °F
Specific Hazards	: Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Will float and can be reignited on surface water.
Suitable Extinguishing Media	: Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable Extinguishing Media	: Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.
Protective Equipment for Firefighters	: Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.
Additional Advice	: Keep adjacent containers cool by spraying with water. If possible remove containers from the danger zone. If the fire cannot be extinguished the only course of action is to evacuate immediately. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways.

Material Safety Data Sheet

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet. Observe the relevant local and international regulations. Avoid contact with skin, eyes and clothing. Evacuate the area of all non-essential personnel. Ventilate contaminated area thoroughly. If contamination of sites occurs remediation may require specialist advice. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Take precautionary measures against static discharges.

Protective measures : Vapour can travel for considerable distances both above and below the ground surface. Underground services (drains, pipelines, cable ducts) can provide preferential flow paths. Do not breathe fumes, vapour. Take measures to minimise the effects on groundwater. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire fighting water) to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.

Clean Up Methods : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

Additional Advice : Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26. U.S. regulations may require reporting releases of this material to the environment which exceed the reportable quantity (refer to Chapter 15) to the National Response Centre at (800) 424-8802. Under Section 311 of the Clean Water Act (CWA) this material is considered an oil. As such, spills into surface waters must be reported to the National Response Centre at (800) 424-8802. This material is covered by EPA's Comprehensive Environmental Response,

Material Safety Data Sheet

Compensation and Liability Act (CERCLA) Petroleum
Exclusion. Therefore, releases to the environment may not be
reportable under CERCLA.

7. HANDLING AND STORAGE

- | | |
|----------------------------|---|
| General Precautions | : Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Air-dry contaminated clothing in a well-ventilated area before laundering. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Prevent spillages. Turn off all battery operated portable electronic devices (examples include: cellular phones, pagers and CD players) before operating gasoline pump. Do not use as a cleaning solvent or other non-motor fuel uses. Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse. For comprehensive advice on handling, product transfer, storage and tank cleaning refer to the product supplier. |
| Handling | : When using do not eat or drink. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Never siphon by mouth. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Avoid exposure. |
| Storage | : Drum and small container storage: Keep containers closed when not in use. Drums should be stacked to a maximum of 3 high. Packaged product must be kept tightly closed and stored in a diked (bunded) well-ventilated area, away from, ignition sources and other sources of heat. Use properly labelled and closeable containers. Take suitable precautions when opening sealed containers, as pressure can build up during storage. Tank storage: Tanks must be specifically designed for use with this product. Bulk storage tanks should be diked (bunded). Locate tanks away from heat and other sources of ignition. Cleaning, inspection and maintenance of storage tanks is a specialist operation, which requires the implementation of strict procedures and precautions. |
| Product Transfer | : Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/sec until fill pipe submerged to twice its diameter, then ≤ 7 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening hatches or manholes. |

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- Recommended Materials** : For containers, or container linings use mild steel, stainless steel. Aluminium may also be used for applications where it does not present an unnecessary fire hazard. Examples of suitable materials are: high density polyethylene (HDPE), polypropylene (PP), and Viton (FKM), which have been specifically tested for compatibility with this product. For container linings, use amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.
- Unsuitable Materials** : Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene. However, some may be suitable for glove materials.
- Container Advice** : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers. Gasoline containers must not be used for storage of other products.
- Additional Information** : Ensure that all local regulations regarding handling and storage facilities are followed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Occupational Exposure Limits**

Material	Source	Type	ppm	mg/m3	Notation
Gasoline, low boiling point naphtha	ACGIH	TWA	300 ppm		
Gasoline, low boiling point naphtha	ACGIH	STEL	500 ppm		
Toluene	ACGIH	TWA	20 ppm		
Toluene	OSHA Z1A	TWA	100 ppm	375 mg/m3	
Toluene	OSHA Z1A	STEL	150 ppm	560 mg/m3	
Toluene	OSHA Z2	TWA	200 ppm		
Toluene	OSHA Z2	Ceiling	300 ppm		
Toluene	OSHA Z2	MAX. CONC	500 ppm		
Xylene, mixed isomers	ACGIH	TWA	100 ppm		
Xylene, mixed isomers	ACGIH	STEL	150 ppm		
Xylene, mixed isomers	OSHA Z1	PEL	100 ppm	435 mg/m3	

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Xylene, mixed isomers	OSHA Z1A	TWA	100 ppm	435 mg/m3	
Xylene, mixed isomers	OSHA Z1A	STEL	150 ppm	655 mg/m3	
Ethanol	ACGIH	STEL	1,000 ppm		
Ethanol	OSHA Z1	PEL	1,000 ppm	1,900 mg/m3	
Ethanol	OSHA Z1A	TWA	1,000 ppm	1,900 mg/m3	
1,2,4-Trimethylbenzene	ACGIH	TWA	25 ppm		
1,2,4-Trimethylbenzene	OSHA Z1A	TWA	25 ppm	125 mg/m3	
Ethylbenzene	ACGIH	TWA	20 ppm		
Ethylbenzene	OSHA Z1	PEL	100 ppm	435 mg/m3	
Ethylbenzene	OSHA Z1A	TWA	100 ppm	435 mg/m3	
Ethylbenzene	OSHA Z1A	STEL	125 ppm	545 mg/m3	
n-hexane	ACGIH	TWA	50 ppm		
n-hexane	ACGIH	SKIN_DES			Can be absorbed through the skin.
n-hexane	OSHA Z1	PEL	500 ppm	1,800 mg/m3	
n-hexane	OSHA Z1A	TWA	50 ppm	180 mg/m3	
Benzene	ACGIH	TWA	0.5 ppm		
Benzene	ACGIH	STEL	2.5 ppm		
Benzene	ACGIH	SKIN_DES			Can be absorbed through the skin.
Benzene	OSHA	TWA	1 ppm		
Benzene	OSHA	STEL	5 ppm		
Benzene	OSHA	OSHA_ACT	0.5 ppm		
Benzene	OSHA Z1A	TWA	1 ppm		
Benzene	OSHA Z1A	STEL	5 ppm		
Benzene	SHELL IS	TWA	0.5 ppm	1.6 mg/m3	
Benzene	SHELL IS	STEL	2.5 ppm	8 mg/m3	
Benzene	OSHA Z2	TWA	10 ppm		
Benzene	OSHA Z2	Ceiling	25 ppm		
Benzene	OSHA Z2	MAX. CONC	50 ppm		
Cyclohexane	ACGIH	TWA	100 ppm		
Cyclohexane	OSHA Z1	PEL	300 ppm	1,050 mg/m3	
Cyclohexane	OSHA Z1A	TWA	300 ppm	1,050 mg/m3	
Naphthalene	ACGIH	TWA	10 ppm		

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Naphthalene	ACGIH	STEL	15 ppm		
Naphthalene	ACGIH	SKIN_DES			Can be absorbed through the skin.
Naphthalene	OSHA Z1	PEL	10 ppm	50 mg/m3	
Naphthalene	OSHA Z1A	TWA	10 ppm	50 mg/m3	
Naphthalene	OSHA Z1A	STEL	15 ppm	75 mg/m3	
Styrene	ACGIH	TWA	20 ppm		
Styrene	ACGIH	STEL	40 ppm		
Styrene	OSHA Z1A	TWA	50 ppm	215 mg/m3	
Styrene	OSHA Z1A	STEL	100 ppm	425 mg/m3	
Styrene	OSHA Z2	TWA	100 ppm		
Styrene	OSHA Z2	Ceiling	200 ppm		
Styrene	OSHA Z2	MAX. CONC	600 ppm		

Additional Information : Shell has adopted as Interim Standards the OSHA Z1A values that were established in 1989 and later rescinded. SHELL IS is the Shell Internal Standard. Skin notation means that significant exposure can also occur by absorption of liquid through the skin and of vapour through the eyes or mucous membranes.

Biological Exposure Index (BEI) - See reference for full details

Material	Determinant	Sampling time	BEI	Reference
Toluene	toluene in Urine	Sampling time: End of shift.	0.03 mg/l	ACGIH BEL (01 2010)
Toluene	toluene in Blood	Sampling time: Prior to last shift of work week.	0.02 mg/l	ACGIH BEL (01 2010)
Toluene	o-Cresol, with hydrolysis in Creatinine in urine	Sampling time: End of shift.	0.3 mg/g	ACGIH BEL (01 2010)
Xylene, mixed isomers	Methylhippuric acids in Creatinine in urine	Sampling time: End of shift.	1.5 g/g	ACGIH BEL (01 2010)
Ethylbenzene	Sum of mandelic acid and phenylglyoxylic acid in Creatinine in urine	Sampling time: End of shift at end of work week.	0.7 g/g	ACGIH BEL (01 2010)
Ethylbenzene	Ethyl benzene in End-exhaled air	Sampling time: Not critical.		ACGIH BEL (01 2010)

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n-hexane	2,5-Hexanedion, without hydrolysis in Urine	Sampling time: End of shift at end of work week.	0.4 mg/l	ACGIH BEL (01 2010)
Benzene	S-Phenylmercapturic acid in Creatinine in urine	Sampling time: End of shift.	25 µg/g	ACGIH BEL (01 2010)
Benzene	t,t-Muconic acid in Creatinine in urine	Sampling time: End of shift.	500 µg/g	ACGIH BEL (01 2010)
Styrene	styrene in Venous blood	Sampling time: End of shift.	0.2 mg/l	ACGIH BEL (01 2010)
Styrene	Mandelic acid plus phenylglyoxylic acid in Creatinine in urine	Sampling time: End of shift.	400 mg/g	ACGIH BEL (01 2010)

Exposure Controls

: The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Use sealed systems as far as possible. Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended. Eye washes and showers for emergency use.

Personal Protective Equipment

: Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory Protection

: If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. All respiratory protection equipment and use must be in accordance with local regulations. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Hand Protection

: Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material,

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glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced.

Eye Protection : Chemical splash goggles (chemical monogoggles).

Protective Clothing : Chemical resistant gloves/gauntlets, boots, and apron (where risk of splashing).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Bronze. Clear, bright liquid.

Odour : Hydrocarbon.

pH : Not applicable.

Freezing Point : -58 °C / -72 °F

Flash point : -40 °C / -40 °F (ASTM D-93 / PMCC)

Upper / lower Flammability or Explosion limits : 1.3 - 7.6 %(V)

Auto-ignition temperature : > 250 °C / 482 °F

Specific gravity : 0.72 - 0.76

Density : ca. 0.78 g/cm³ at 15 °C / 59 °F

Water solubility : Negligible.

Kinematic viscosity : < 1 mm²/s at 40 °C / 104 °F

Vapour density (air=1) : 3.5

10. STABILITY AND REACTIVITY

Stability : Stable under normal conditions of use.

Conditions to Avoid : Avoid heat, sparks, open flames and other ignition sources.

Materials to Avoid : Strong oxidising agents.

Hazardous Decomposition Products : Hazardous decomposition products are not expected to form during normal storage. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment : Information given is based on product testing, and/or similar products, and/or components.

Acute Oral Toxicity : Low toxicity: LD₅₀ >2000 mg/kg , Rat
Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

Acute Dermal Toxicity : Low toxicity: LD₅₀ >2000 mg/kg , Rabbit

Acute Inhalation Toxicity : Low toxicity: LC₅₀ >20 mg/l / 1.00 h, Rat
High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

Skin Irritation : Irritating to skin.

Eye Irritation : Moderately irritating to eyes (but insufficient to classify).

Respiratory Irritation : Based on human experience, breathing of vapours or mists may cause a temporary burning sensation to nose, throat and

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	lungs.
Sensitisation	: Not expected to be a sensitiser.
Repeated Dose Toxicity	: Kidney: caused kidney effects in male rats which are not considered relevant to humans Blood-forming organs: repeated exposure affects the bone marrow. (Benzene) Peripheral nervous system: repeated exposure causes peripheral neuropathy in animals. (n-hexane)
Mutagenicity	: May cause heritable genetic damage. (Benzene) Mutagenicity studies on gasoline and gasoline blending streams have shown predominantly negative results.
Carcinogenicity	: Known human carcinogen. (Benzene) May cause leukaemia (AML - acute myelogenous leukemia). (Benzene) Inhalation exposure to mice causes liver tumours, which are not considered relevant to humans.

Material	: Carcinogenicity Classification
Gasoline, low boiling point naphtha	: ACGIH Group A3: Confirmed animal carcinogen with unknown relevance to humans.
Gasoline, low boiling point naphtha	: IARC 2B: Possibly carcinogenic to humans.
Xylene, mixed isomers	: ACGIH Group A4: Not classifiable as a human carcinogen.
Xylene, mixed isomers	: IARC 3: Not classifiable as to carcinogenicity to humans.
Toluene	: ACGIH Group A4: Not classifiable as a human carcinogen.
Toluene	: IARC 3: Not classifiable as to carcinogenicity to humans.
Ethanol	: ACGIH Group A4: Not classifiable as a human carcinogen.
Ethylbenzene	: ACGIH Group A3: Confirmed animal carcinogen with unknown relevance to humans.
Ethylbenzene	: IARC 2B: Possibly carcinogenic to humans.
Benzene	: ACGIH Group A1: Confirmed human carcinogen.
Benzene	: NTP: Known carcinogen.
Benzene	: IARC 1: Carcinogenic to humans.
Benzene	: OSHASP: Cancer hazard.
Naphthalene	: ACGIH Group A4: Not classifiable as a human carcinogen.
Naphthalene	: NTP: Anticipated carcinogen.
Naphthalene	: IARC 2B: Possibly carcinogenic to humans.
Styrene	: ACGIH Group A4: Not classifiable as a human carcinogen.
Styrene	: NTP: Reasonably anticipated to be a human carcinogen.
Styrene	: IARC 2B: Possibly carcinogenic to humans.

Reproductive and Developmental Toxicity	: Causes foetotoxicity at doses which are maternally toxic. (Toluene) May impair fertility at doses which produce other toxic effects. (n-hexane) Many case studies involving abuse during pregnancy indicate that toluene can cause birth defects, growth retardation and learning difficulties. (Toluene) Ethanol, a component of this material, may cause birth defects and/or miscarriages following high oral doses.
Additional Information	: Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac

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arrest.

Prolonged and repeated exposures to high concentrations have resulted in hearing loss in rats. Solvent abuse and noise interaction in the work environment may cause hearing loss.

(Toluene)

Abuse of vapours has been associated with organ damage and death. (Toluene)

May cause MDS (Myelodysplastic Syndrome). (Benzene)

12. ECOLOGICAL INFORMATION

Incomplete ecotoxicological data are available for this substance.

Acute Toxicity	:	Toxic: LL/EL/IL50 1-10 mg/l (to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract).
Fish	:	Expected to be toxic: LL/EL/IL50 1-10 mg/l
Aquatic Invertebrates	:	Expected to be toxic: LL/EL/IL50 1-10 mg/l
Algae	:	Expected to be toxic: LL/EL/IL50 1-10 mg/l
Microorganisms	:	Expected to be harmful: LL/EL/IL50 10-100 mg/l
Mobility	:	Floats on water. Evaporates within a day from water or soil surfaces. Large volumes may penetrate soil and could contaminate groundwater. Contains volatile constituents.
Persistence/degradability	:	Major constituents are expected to be inherently biodegradable. The volatile constituents will oxidize rapidly by photochemical reactions in air.
Bioaccumulation	:	Expected to be inherently biodegradable. Contains constituents with the potential to bioaccumulate.
Other Adverse Effects	:	Films formed on water may affect oxygen transfer and damage organisms.

13. DISPOSAL CONSIDERATIONS

Material Disposal	:	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand. Do not dispose into the environment, in drains or in water courses. Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination.
Container Disposal	:	Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not, puncture, cut, or weld uncleaned drums. Send to drum recoverer or metal reclaimer. Do not pollute the soil, water or environment with the waste container.
Local Legislation	:	Disposal should be in accordance with applicable regional,

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national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

14. TRANSPORT INFORMATION**US Department of Transportation Classification (49CFR)**

Identification number UN 1203
Proper shipping name Gasohol
Class / Division 3

Packing group II

Emergency Response Guide No. 128

Additional Information Oil: This product is an oil under 49CFR (DOT) Part 130. If shipped by rail or highway in a tank with a capacity of 3500 gallons or more, it is subject to these requirements. Mixtures or solutions containing 10% or more of this product may also be subject to this rule.

IMDG

Identification number UN 1203
Proper shipping name GASOLINE
Class / Division 3
Packing group II
Marine pollutant: Yes

IATA (Country variations may apply)

Identification number UN 1203
Proper shipping name Gasoline
Class / Division 3
Packing group II

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulatory Status

Additional Information : IARC has classified gasoline exhaust emissions as a Class 2B carcinogen - possibly carcinogenic to humans. Steps should be taken to prevent personal exposure to gasoline exhaust emissions.

Comprehensive Environmental Release, Compensation & Liability Act (CERCLA)

BR Reformulated Gasoline with

Reportable quantity: 100 lbs

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EtOH ()

Gasoline, low boiling point naphtha () Reportable quantity: 100 lbs

Xylene, mixed isomers (1330-20-7) Reportable quantity: 100 lbs

Toluene (108-88-3) Reportable quantity: 1000 lbs

Ethanol (64-17-5) Reportable quantity: 100 lbs

Ethylbenzene (100-41-4) Reportable quantity: 1000 lbs

n-hexane (110-54-3) Reportable quantity: 5000 lbs

Benzene (71-43-2) Reportable quantity: 10 lbs

Naphthalene (91-20-3) Reportable quantity: 100 lbs

Cyclohexane (110-82-7) Reportable quantity: 1000 lbs

Styrene (100-42-5) Reportable quantity: 1000 lbs

Shell classifies this material as an "oil" under the CERCLA Petroleum Exclusion, therefore releases to the environment are not reportable under CERCLA.

Clean Water Act (CWA) Section 311

Xylene, mixed isomers (1330-20-7) Reportable quantity: 100 lbs

Toluene (108-88-3) Reportable quantity: 1000 lbs

Ethylbenzene (100-41-4) Reportable quantity: 1000 lbs

Benzene (71-43-2) Reportable quantity: 10 lbs

Naphthalene (91-20-3) Reportable quantity: 100 lbs

Cyclohexane (110-82-7) Reportable quantity: 1000 lbs

Styrene (100-42-5) Reportable quantity: 1000 lbs

Under Section 311 of the Clean Water Act (CWA) this material is considered an oil. As such, spills into surface waters must be reported to the National Response Centre at (800) 424-8802.

SARA Hazard Categories (311/312)

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Immediate (Acute) Health Hazard. Delayed (Chronic) Health Hazard. Fire Hazard.

SARA Toxic Release Inventory (TRI) (313)

Xylene, mixed isomers (1330-20-7)
Toluene (108-88-3)
1,2,4-Trimethylbenzene (95-63-6)
Ethylbenzene (100-41-4)
n-hexane (110-54-3)
Benzene (71-43-2)
Naphthalene (91-20-3)
Cyclohexane (110-82-7)
Styrene (100-42-5)

State Regulatory Status**California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)**

This product contains a chemical known to the State of California to cause cancer.
Known to the State of California to cause birth defects or other reproductive harm.

New Jersey Right-To-Know Chemical List

Xylene, mixed isomers (1330-20-7)	Listed.
Toluene (108-88-3)	Listed.
Ethanol (64-17-5)	Listed.
1,2,4-Trimethylbenzene (95-63-6)	Listed.
Ethylbenzene (100-41-4)	Listed.
n-hexane (110-54-3)	Listed.
Benzene (71-43-2)	Listed.
Naphthalene (91-20-3)	Listed.
Cyclohexane (110-82-7)	Listed.
Styrene (100-42-5)	Listed.

Pennsylvania Right-To-Know Chemical List

Gasoline, low boiling point naphtha ()	Listed.
Xylene, mixed isomers (1330-20-7)	Environmental hazard.
Toluene (108-88-3)	Listed.
	Environmental hazard.
Ethanol (64-17-5)	Listed.
	Listed.

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1,2,4-Trimethylbenzene (95-63-6)	Environmental hazard. Listed.
Ethylbenzene (100-41-4)	Environmental hazard. Listed.
n-hexane (110-54-3)	Listed.
Benzene (71-43-2)	Special hazard. Environmental hazard. Listed.
Naphthalene (91-20-3)	Environmental hazard. Listed.
Cyclohexane (110-82-7)	Environmental hazard. Listed.
Styrene (100-42-5)	Environmental hazard. Listed.

16. OTHER INFORMATION

Additional Information	: This document contains important information to ensure the safe storage, handling and use of this product. The information in this document should be brought to the attention of the person in your organisation responsible for advising on safety matters.
NFPA Rating (Health, Fire, Reactivity)	: 1, 3, 0
MSDS Version Number	: 6.0
MSDS Effective Date	: 09/09/2011
MSDS Revisions	: A vertical bar () in the left margin indicates an amendment from the previous version.
MSDS Regulation	: The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Uses and Restrictions	: This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier. This product is not to be used as a solvent or cleaning agent; for lighting or brightening fires; as a skin cleanser. This product is designed only to suit automotive applications and no provision is made for the requirements of aviation applications.
MSDS Distribution	: The information in this document should be made available to all who may handle the product.
Disclaimer	: The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.

Material Safety Data Sheet

BR Reformulated Gasoline with EtOH

MSDS# 401740M

Version 6.0

Effective Date 09/09/2011

According to OSHA Hazard Communication Standard, 29 CFR
1910.1200

Motiva Enterprise LLC
Testing Schedule - Distribution
Terminals



Testing Schedule – Distribution Terminals

PQ-Schedule-1	Revision 5 (Motiva 2)	Page 1
Date Revised: 2/22/10	Review: Annual Review	Owner: Motiva Product Quality
Written by: Mary Beth Kinman	Reviewed by Aisha Albimani	Approved by: Mary Beth Kinman/ Del Wood

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Frequency	
							Summer – VOC RVP/VOC BD	Winter– Non-VOC
EPA RBOB	P/L Receipts	Retain Sample	N/A		As Required	15 days	As required per LOP	As required per LOP
	Marine receipts	Retain Sample	N/A	Review incoming COA prior to unloading	Vessel testing is coordinated by the Supply group	15 days	Every Receipt	Every Receipt
	Terminal Tanks (See Note 1)	RVP, Upper	D 5191	See Annual RVP/VOC Guidelines and Requirements	1 quart Upper Third	None	Every Receipt	Not Required
		RVP, Lower	D 5191	See Annual RVP/VOC Guidelines and Requirements	1 quart Lower Third	None	Every Receipt	Not Required
		API Gravity Appearance	D4052 D4176	Report (See Note 2) Clear and Bright @ 65-80°F	1 quart composite for these tests	15 days	Every Receipt Every Receipt	Every Receipt Every Receipt
	Terminal Tanks Blend Down Period	RVP, Top 1'	D 5191	See Annual RVP/VOC Guidelines and Requirements	1 quart at 1' Level	None	Blend-down Only	Not Required
		VOC, Top 1' VOC, Upper VOC, Lower	Complex Model	See Annual RVP/VOC Guidelines and Requirements. Requirements are: 25% min reduction in Region 1, 23.4% min reduction in Region 2, and 21.4% min reduction in Region 2 Adjusted	1 quart at 1' Level 1 quart Upper Third 1 quart Lower Third		Blend- down Only. Per blend down letter. VOC samples to be sent to 3 rd Party lab for VOC certification	Not Required
EPA RFG Gasoline	Random Outbound Truck	% Ethanol	D5845	Petrospec Result 9.7 +/- 0.5 % Ethanol	All Level Truck Sample	None	Weekly during ethanol Implementation process and for a period of no less than 3 months or until terminal can demonstrate conformance to blend %. (See Note 4) One truck on one Lane. Use a random schedule to include every meter on each Lane (See Note 5)	
	Terminal Rack	% Ethanol (See Note 3)		10.0 ± 0.5% max by TMS Meter Blend Ratio Check.	N/A	None	Daily/ Folio	Daily/Folio

Note 1: VRU return tank shall be tested for RVP weekly during summer VOC control period.

Note 2: Max +/- 0.7 °API difference from reported value if COA is available.

Note 3: Daily/ folio terminal ethanol and product inventory reconciliation must be performed to determine % ethanol.

Note 4: Any change or modification that may impact the blending system shall be reviewed by Motiva PQ Analyst to determine if an additional testing period is required to check conformance to blend %.

Note 5: At the end of 3 months, send the truck data sheets and the Petrospec SQC chart to Motiva PQ Analyst for review. Be sure the meter throughput ratio check blend and out of spec BOL printing is configured and functioning properly for ethanol specification.



Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer – VOC	Winter– Non-VOC
Conventional (CBOB, Suboctane and full octane gasoline)	P/L Receipts	Retain Sample	N/A		As Required	15 days	As required per LOP	As required per LOP
	Marine Receipts	RVP	D5191	Review incoming COA prior to unloading	Vessel testing is coordinated by the Supply group	15 days	Every Receipt	Every Receipt
	Terminal Tanks (See Note 1)	RVP, Upper	D 5191	See Annual RVP/VOC Guidelines and Requirements See Annual RVP/VOC Guidelines and Requirements Report (See Note 2) Clear and Bright	1 quart Upper Third	None	Every Receipt	Not Required
		RVP, Lower	D 5191		1 quart Lower Third	None	Every Receipt	Not Required
		API Gravity Appearance	D4052 D4176		1 quart composite. for these tests	15 days	Every Receipt Every Receipt	Every Receipt Every Receipt
	Terminal Tanks Blend down Period	RVP, Top 1'	D 5191	See Annual RVP/VOC Guidelines and Requirements	1 quart of 1' Level	None	Blend-down Only	Not Required
All Oxygenated Conventional Gasoline	Random Outbound Truck	%Ethanol	D5845	Petrospec Result 9.7 +/- 0.5 % Ethanol	All Level Truck Sample	N/A	Weekly during ethanol implementation process and for a period of no less than 3 months or until terminal can demonstrate conformance to blend %. (See Note 4) One truck on one Lane. Use a random schedule to include every meter on each Lane (See Note 5)	
	Terminal Rack	%Ethanol (See Note 3)		10.0 ± 0.5% max by TMS Meter Blend Ratio Check	N/A	N/A	Daily/Folio	Daily/Folio

Note 1: VRU return tank shall be tested for RVP weekly during summer RVP control period.

Note 2: Max +/- 0.7 °API difference from reported value if COA is available.

Note 3: Daily/ folio terminal ethanol and product inventory reconciliation must be performed to determine % ethanol.

Note 4: Any change or modification that may impact the blending system shall be reviewed by Motiva PQ Analyst to determine if an additional testing period is required to check conformance to blend %.

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Testing Schedule – Distribution Terminals

Note 5: At the end of 3 months, send the truck data sheets and the Petrospec SQC chart to Motiva PQ Analyst for review. Be sure the meter throughput ratio check blend and out of spec BOL printing is configured and functioning properly for ethanol specification.

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Frequency	
							Summer – VOC RVP/VOC BD	Winter– Non-VOC
Butane	Terminal Tanks (See Note 1)				Special sample cylinder	None		One sample at every 350,000 to a max of 500,000 gallons of butane received or one sample every 3 months, whichever is more frequent per tank.
New Installations Of Butane		(See Note 2)						

Note 1: Terminal changes sample cylinder and sends sample cylinder to Texon for testing.

Note 2: On new installations of butane a risk based sampling and testing procedure must be completed prior to start up to determine the sampling and testing required.

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Testing Schedule – Distribution Terminals

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Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer – VOC	Winter– Non-VOC
Neat Ethanol	Import vessel	ASTM D4806		Must meet ASTM D4806 specifications for fuel grade ethanol applicable to the state.	Volumetric Composite	15 days	Every Import	Every Import
	Blending Skid For addition of Denaturant (See Note 1)	API Gravity	D4052	45.9-46.8° API Specification Range (specific gravity = 0.7937-0.7977)	15 minutes After start Of Blend	As required	Every Import	Every Import
Denatured Ethanol	Hub Terminals (Distributors of Ethanol)	API Gravity Appearance Ethanol Methanol Washed Gum Inorganic Chloride Copper Water Acidity PHe Sulfate Sulfur	D4052 D4176 D5501 D5501 D381 D7319 D1688 E1064 D1613 D6423 D4806 D5453	45.5 – 49.0 ° API Specification Range Clear & Bright, Free of Particulate 92.1 % Volume Minimum 0.5 % Volume Maximum 5.0 mg/100ml Maximum 10 ppmw Maximum or 8 mg/l Maximum 0.1 mg/Kg Maximum 1.0 % Volume Maximum 0.007% Weight Maximum 6.5 – 9.0 pH Range 4 ppmv Maximum for states which adopt current ASTM version. 30 ppmw Sulfur (current ASTM version)	All level or Volumetric Composite of tank	15 days	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt

Note 1: Target denaturant injection rate to meet IRS Farm Bill regulation max 2.50%.

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Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer – VOC	Winter– Non-VOC
Denatured Ethanol	Truck Receipts	Appearance API Gravity	D4176 D4052	Clear and Bright @ 65-80°F 45.5 – 49.0 °API Target Range	4 oz Minimum Of all Truck Compartments	None	Every Receipt Every Receipt	Every Receipt Every Receipt
	Rail Receipts	Appearance API Gravity	D4176 D4052	Clear and Bright @ 65-80°F 45.5 – 49.0 °API Target Range	4 oz Minimum Of each Rail Car	Retain Until the Tank Is Released Or 15 days	Every Receipt Every Receipt	Every Receipt Every Receipt
	Barge Receipts	Appearance API Gravity Water	D4176 D4052 E1064	Clear and Bright @ 65-80°F 45.5 – 49.0 °API Target Range Max 1.0 % volume	4 oz Minimum Of each Compartment	15 days	Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt
	Terminal Tanks	API Gravity Appearance Ethanol Methanol Water	D4052 D4176 D5501 D5501 E1064	45.5 – 49.0 °API Target Range Clear and Bright @ 65-80°F 92.1 % Volume Minimum 0.5 % Volume Maximum Max 1.0 % volume, Third Party lab	Volumetric Composite	15 days	Once/Month/Tank Once/Month/Tank Once/Month/Tank Once/Month/Tank Once/Month/Tank	Once/Month/Tank Once/Month/Tank Once/Month/Tank Once/Month/Tank Once/Month/Tank

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Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer	Winter
EPA Ultra Low Sulfur Diesel	P/L Receipts	API Gravity Haze Flashpoint Sulfur	D4052 D4176 D93 D7039	Report only Max 3 Min 125 °F Max 15 ppmw	1 quart during 1st 15 minutes of P/L receipt	15 days if QA issue is found	Every Receipt Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt Every Receipt
	Marine Receipts (See Note 1)	API Gravity Haze Flashpoint Sulfur	D4052 D4176 D93 D7039	Report only Max 3 Min 125 °F Max 15 ppmw	1 quart during 1st 30 minutes of marine receipt	15 days if QA issue is found	Every Receipt Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt Every Receipt
	Terminal – Tanks	API Gravity Haze Flashpoint	D4052 D4176 D93	Report only Max 2 Min 125 °F (Pipelines may have higher Specification)	1 quart Composite	15 days	Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt
		Sulfur Conductivity	D7039 D2624	Max 15 ppmw Min 80pS/m (if tank contains additive) (See Note 2)			Every Receipt Every Receipt	Every Receipt Every Receipt
	Terminal - Rack	Conductivity	D2624	Min 50pS/m (If additive added at rack)	1 quart All Level	None	Once/Week/Rack	Once/Week/Rack
Oversite Program	Southwest Research Institute (See note 3)	HFRR Lubricity Sulfur	D6079 D5453	Terminal will send one sample each month to Southwest Research Institute for testing in boxes Supplied. Results tracked by PQ Analyst.	1 quart All Level	15 days Southwest Research Inst.	Once/Month/Rack Or tank - where Lubricity added	Once/Month/Rack Or tank - where Lubricity added

Note 1: Review incoming COA prior to unloading. Vessel testing is coordinated by the Supply group.

Note 2: If <80pS/m at tank, test at rack to be sure Conductivity is at specification of a min 50pS/m.

Note 3: Terminal will send one sample each month to Southwest Research Institute for testing in boxes supplied. Results are tracked by PQ Analyst. All results are in the PQ Livelihood folder. (Lubricity max 520um and Sulfur max 15ppm).

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Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer	Winter
EPA Low Sulfur	P/L Receipts	API Gravity Haze Flashpoint	D4052 D4176 D93	Report only Max 3 Min 125 °F	1 quart during 1st 15 minutes of P/L receipt	15 days if QA issue is found	Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt
	Marine Receipts (See Note 1)	API Gravity Haze Flashpoint	D4052 D4176 D93	Report only Max 3 Min 125 °F	1 quart during 1st 30 minutes of Marine receipt	15 days if QA issue is found	Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt
	Terminal – Tanks	API Gravity Haze Flashpoint	D4052 D4176 D93	Report only Max 2 Min 125 °F (Pipelines may have higher specification)	1 quart Composite	15 days	Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt
		Sulfur Conductivity *Kinematic Viscosity @ 40°C *Cetane Index *Cetane Index *T90 * (See Note 2)	D7039 D2624 D445 D976 D4737B D85	Max 500 ppmw Min 80pS/m (if tank contains additive) (See Note 3) 1.9-4.1 mm ² /S at 40°C Min 40 Min 40 540 – 640 °F			Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt
	Terminal - Rack	Conductivity	D2624	Min 50pS/m (additive added at rack)	1 quart All Level	None	Once/Week/Rack	Once/Week/Rack
Oversite Program	Southwest Research Institute	HFRR Lubricity (See Note 4)	D6079	Terminal will send one sample each month to Southwest Research Institute for testing in boxes supplied. Results tracked by PQ Analyst.	1 quart All Level	Ship to Southwest Research Institute (15 days)	Once/Month/Rack Or tank - where Lubricity added	Once/Month/Rack Or tank - where Lubricity added

Note 1: Review incoming COA prior to unloading. Vessel testing is coordinated by the Supply group

Note 2: These tests (marked with *) must be done if transmix is upgraded to LSD.

Note 3: If <80pS/m at tank, test at rack to be sure Conductivity is at specification of a min 50pS/m.

Note 4: : Terminal will send one sample each month to Southwest Research Institute for testing in boxes supplied. Results are tracked by PQ Analyst. All results are in the PQ Livelihood folder. (Lubricity max 520um).

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Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer	Winter
EPA High Sulfur Diesel	P/L Receipts	API Gravity Haze Flashpoint	D4052 D4176 D93	Report only Max 3 Min 125 °F	1 quart during 1st 15 minutes of P/L receipt	15 days	Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt
	Marine Receipts (See Note 1)	API Gravity Haze Flashpoint	D4052 D4176 D93	Report only Max 3 Min 125 °F	1 quart during 1st 30 minutes of Marine receipt	15 days	Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt
	Terminal – Tanks	API Gravity Haze Flashpoint Conductivity	D4052 D4176 D93 D2624	Report only Max 2 Min 125 °F (Pipelines may have higher Specification Min 80pS/m (if tank contains additive) (See Note 2)	1 quart all Composite for all tests.	15 days	Every Receipt Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt Every Receipt
	Terminal - Rack	Conductivity	D2624	Min 50pS/m (additive added at rack)	1 quart All Level	None	Once/Week/Rack	Once/Week/Rack

Note 1: Review incoming COA prior to unloading. Vessel testing is coordinated by the Supply group

Note 2: If <80pS/m at tank, test at rack to be sure Conductivity is at specification of a min 50pS/m.

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Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Acceptance/Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer	Winter
Biodiesel B100/B99	Truck Receipts	API Gravity Appearance Flash point	D4052 D4176 LEL Reading (See Note 1)	Max +/- 0.7° API difference from COA Clear and Bright <1% * * If LEL >1% perform Flash point D93 Min 125 °F to check for gross gasoline contamination	1 quart all level	None	Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt
	Rail Receipts	API Gravity Appearance	D4052 D4176	Max +/- 0.7° API difference from COA Clear and Bright	1 quart	Retain until tank released or 15 days	Every Receipt Every Receipt	Every Receipt Every Receipt
	Terminal Tanks (Contract Lab) (See Note 2)	Kinematic Viscosity @ 40°C Acid Number Oxidation Stability Water Content Micro organism activity or Hy-Lite Kit	D445 D664 EN14112 D6304 Microbmonitor or equivalent kit D7463	1.9 – 6.0 mm²/s Max 0.50 % Wt. Min 6 hours Max 0.04 % Vol. (Max 400 ppmw) Max 4000 cfu/L or slight growth Max 2000 RLU	1 quart composite 1 quart with bacon sampler	15 days	Once/Month Once/Month Once/Month Once/Month Once/Quarter	Once/Month Once/Month Once/Month Once/Month Once/Quarter
	Terminal Tanks (Terminal)	API Gravity Haze Sulfur Flash point	D4052 D4176 D5453 or D7039 D93	Max +/- 0.7° API difference from COA Max 2 Max 10 ppmw Min 125 °F	1 quart composite	15 days	Once/Month Once/Month Once/Month Once/Month	Once/Month Once/Month Once/Month Once/Month

Note 1: Contact Product Quality Analyst to discuss if delivery trucks are dedicated biodiesel written in contract – may not need to do LEL reading.

Note 2: Send a copy of monthly and quarterly results to Product Quality Analyst.

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Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Acceptance/Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer	Winter
B5 Diesel (See Note 1)	Terminal Tank	Conductivity B2-B5 Content	D2624 EN14078/D7371	Min 80pS/m (if tank contains additive) (See Note 3) B5: 4.5 vol% to 5.5 vol% Up to B5: 2 vol% up to 5.5 vol%	1 quart	15 days	Each Receipt Each Receipt	Each Receipt Each Receipt
	Terminal – Rack	Conductivity	D2624	Min 50pS/m (if additive added at rack)	1 quart All Level	15 days	Once/Week/Rack	Once/Week/Rack
		HFRR Lubricity B2-B5 Content (See Note 2)	D6079 % biodiesel	Max 520 µm (0.520 mm) B5: 4.5 vol% to 5.5 vol% Up to B5: 2 vol% up to 5.5 vol% by TMS Meter Blend Ratio check	1 quart All Level N/A	 None	Once/Month/Rack Daily/Folio	Once/Month/Rack Daily/Folio

Note 1: If biodiesel contains <2% B99/B100 lubricity additive is required.

Note 2: Daily/ folio terminal biodiesel and biodiesel blends inventory reconciliation must be performed to determine % biodiesel.

Note 3: If <80pS/m at tank, test at rack to be sure Conductivity is at specification of a min 50pS/m.

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Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer	Winter
Jet-A	P/L Receipts into Terminal	API Gravity Appearance	D4052 D4176	37–51°API (See Note 1) Clear and Bright	1 quart after P/L Switch	None	Every Receipt Every Receipt	Every Receipt Every Receipt
		API Gravity Appearance Flashpoint MSEP Millipore * Aqua-Glo * Conductivity	D4052 D4176 D56 D3948 D2276 D3240 D2624	37–51°API (See Note 1) Clear and Bright Min 105 °F Shell, industry 100 °F Min 85 MSEP Alert @ A – B – G 6 Max 15 ppm incoming Report	1 quart during 1st 15 minutes At P/L manifold * line sample	None	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt
		API Gravity Appearance Flashpoint MSEP Millipore * Aqua-Glo * Conductivity	D4052 D4176 D56 D3948 D2276 D3240 D2624	37–51°API (See Note 1) Clear and bright Min 105 °F Shell, industry 100 °F Min 85 MSEP Alert @ A – B – G 6 Max 15 ppm incoming Report	1 quart during 1st ½ of receipt At the P/L Manifold * line sample	None	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt
		API Gravity Appearance Flashpoint MSEP	D4052 D4176 D56 D3948	37–51°API (See Note 1) Clear and Bright Min 105 °F Shell, industry 100 °F Min 85 MSEP	1 quart during last 15 minutes At P/L manifold	None	Retain for testing if receipt tank is off-spec	Retain for testing If receipt tank is off-spec

Note 1: Max +/- 0.7 °API difference from reported value if COA is available.

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Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer	Winter
Jet-A	Marine Receipts into terminal	Quantity	N/A	Report	1 quart each compartment	None	Every Receipt	Every Receipt
		Temperature	N/A	Report			Every Receipt	Every Receipt
		Water	Visual	No Free Water			Every Receipt	Every Receipt
		API Gravity	D4052	37 – 51 Max. 0.7difference from reported CoA	1 quart each compartment	30 days	Every Receipt	Every Receipt
		Appearance	D4176	Clear and Bright			Every Receipt	Every Receipt
		Flashpoint	D56	Min 105 °F Shell, industry 100 °F			Every Receipt	Every Receipt
Jet-A	Marine Receipts into terminal	MSEP	D3948	Min 85 MSEP (See Note 1)	1 quart composite		Every Receipt	Every Receipt
		API Gravity	D4052	37 – 51 Max. 0.7difference from reported CoA	1 quart at start	None	Every Receipt	Every Receipt
		Appearance	D4176	Clear and Bright	Of receipt		Every Receipt	Every Receipt
		Flashpoint	D56	Min 105 °F Shell, industry 100 °F	At shore side		Every Receipt	Every Receipt
		MSEP	D3948	Min 85 MSEP (See Note 1)	connecting flange		Every Receipt	Every Receipt
		API Gravity	D3240	37 – 51 Max. 0.7difference from reported CoA	1-quart in	None	Every Receipt	Every Receipt
Jet-A	Marine Receipts into terminal	Appearance	D4176	Clear and Bright	1 st 30 minutes		Every Receipt	Every Receipt
		Flashpoint	D56	Min 105 °F Shell, industry 100 °F	Of receipt		Every Receipt	Every Receipt
		MSEP	D3948	Min 85 MSEP (See Note 1)	At shore side		Every Receipt	Every Receipt
		Millipore *	D2276	Alert @ A – B – G 6	connecting flange		Every Receipt	Every Receipt
		Aqua-Glo *	D4052	Max 15 ppm incoming			Every Receipt	Every Receipt
		Conductivity	D2624	Report (See Note 1)	* line sample		Every Receipt	Every Receipt
Jet-A	Marine Receipts into terminal	API Gravity	D4052	37 – 51 Max. 0.7difference from reported CoA	1 quart at	None	Every Receipt	Every Receipt
		Appearance	D4176	Clear and Bright	shore side		Every Receipt	Every Receipt
		Flashpoint	D56	Min 105 °F Shell, industry 100 °F	Connecting		Every Receipt	Every Receipt
		MSEP	D3948	Min 85 MSEP (See Note 1)	Flange at mid-point		Every Receipt	Every Receipt
		Millipore *	D2276	Alert @ A – B – G 6	Of receipt		Every Receipt	Every Receipt
		Aqua-Glo *	D3240	Max 15 ppm incoming			Every Receipt	Every Receipt
Jet-A	Marine Receipts into terminal	Conductivity	D2624	Report	* line sample		Every Receipt	Every Receipt

Note 1: Incoming overseas Marine Receipts may contain SDA (Static Dissipator Additive). This causes low MSEP results and measurable conductivity. Filtration is required before tank re-certification and going to rack.

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Note 1: Incoming overseas Marine Receipts may contain SDA (Static Dissipator Additive). This causes low MSEP results and measurable conductivity. Filtration is required before tank re-certification and going to rack.

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Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer	Winter
Jet-A	Terminal Filters	Aqua-Glo * Millipore * MSEP	D3240 D2276 D3948	Max 10 ppm incoming A-2, B-2 or G-2 or better Min 85 MSEP	1-quart at Inlet To pre-filter * line sample	30 days	Weekly Weekly Weekly	Weekly Weekly Weekly
		Conductivity Aqua-Glo * Millipore * MSEP	D2624 D3240 D2276 D3948	Within 30 CU of Automated CU Meter Max 10 ppm outgoing Alert @ A – B – G2 Min 85 MSEP	1-quart at outlet of filter/ separator * line sample	30 days	Weekly Weekly Weekly	Weekly Weekly Weekly
	Terminal – Rack	Conductivity Millipore * Aqua-Glo *	D2624 D2276 D3240	50 – 600 pS/m (Automated CU Meter) Alert @ A – B – G 2 Max 10 ppm outgoing	1-quart at truck rack sample point * line sample	15 days None None	Weekly Daily Daily	Weekly Daily Daily
	Transport Trucks Shipment	White Bucket	Visual	Clear and bright, free from particulates. No visible free or suspended water and no evidence of red dye	1 quart composite	15 days	Every truck	Every truck

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Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer	Winter
AvGas 100 LL	Railcar Receipt (See Note 1)	API Gravity Color Appearance Particulates Free Water	D 1298 D 2392 D4176 Visual Visual	Max 0.7 difference from reported value on CoA Blue Clear and Bright Free of Particulates None	1 Qt Amber White Bucket White Bucket White Bucket White Bucket	30 days None None None None	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt
	Truck Receipt	API Gravity Color Appearance Particulates Free Water	D 1298 D 2392 D4176 Visual Visual	Max 0.7 difference from reported value on CoA Blue Clear and Bright Free of Particulates None	1 Qt Amber White Bucket White bucket White bucket White bucket	30 days None None None None	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt
	Tank Analyses (See Note 2)	API Gravity Color Appearance Particulates Free Water	D 1298 D 2392 D4176 Visual Visual	Max 0.7 difference from reported value on CoA Blue Clear and Bright Free of Particulates None	1 Qt Amber White Bucket White bucket White bucket White bucket		Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt Every Receipt Every Receipt

Note 1: Check the seals and grade plate of the railcar upon arrival. Review the CoA and check each receipt for compliance to the specifications in ASTM D910 prior to unloading the railcar.

Note 2: The terminal must supply a Release Certificate for each truck load of AvGas 100 that leaves the terminal.

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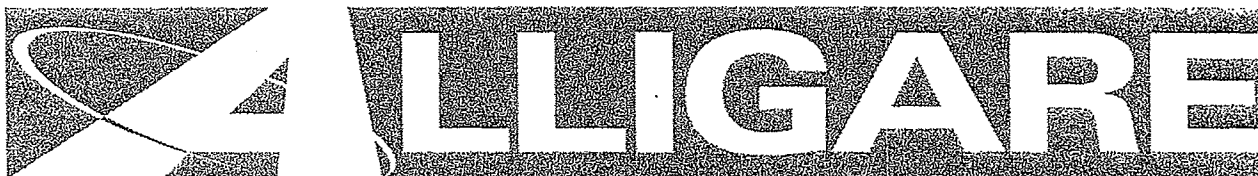
Testing Schedule – Distribution Terminals

Product	Location	Analyses	ASTM Method	Terminal Release Specifications	Sample	Sample Retain	Testing Frequency	
							Summer	Winter
Kerosene	P/L Receipts	API Gravity Appearance	D4052 D4176	Max 0.7 difference from reported if CoA is available Clear and Bright	1 quart during 1st 15 minutes at P/L manifold	None	Every Receipt Every Receipt	Every Receipt Every Receipt
	Marine Receipts	API Gravity Appearance	D4052 D4176	Max 0.7 difference from reported if CoA is available Clear and Bright	1-quart in 1st 30 minutes at shore side connecting flange	None	Every Receipt Every Receipt	Every Receipt Every Receipt
	Terminal Tanks	API Gravity Appearance Flashpoint MSEP	D4052 D4176 D56 D3948	Max 0.7 difference from reported if CoA is available Clear and Bright Min 105 °F Min 75	1 quart composite	30 days	Every Receipt Every Receipt Every Receipt Every Receipt	Every Receipt Every Receipt Every Receipt Every Receipt

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Operations Data Files

Herbicide MSDS's



ALLIGARE 90

NONIONIC LOW-FOAM WETTER/SPREADER SURFACTANT

Alkylpolyoxethylene and derivatives and humectant	90.0%
Other Ingredients:	10.0%
TOTAL:	100.0%

KEEP OUT OF REACH OF CHILDREN CAUTION!/PRECAUCIÓN!

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail.)

Precautionary Statements: Do not take internally. Avoid skin contact. May cause skin and eye irritation.

FIRST AID

Call a poison control center or doctor immediately for treatment advice.

If Swallowed: Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

If on Skin or Clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes.

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth to mouth if possible.

If in Eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses if present, after the first 5 minutes, then continue rinsing eye. Have the product container with you when calling a poison control center or doctor, or going for treatment.

SN: 001A-072307

Distributed By: Alligare, LLC
13 N. 8th Street, Opelika, AL 36801

PEEL HERE TO OPEN ➤

Alligare 90 13 N 8th Street Opelika, AL 36801
MATERIAL SAFETY DATA SHEET

1. PRODUCT IDENTIFICATION

TRADEMARK OR PRODUCT NAME: Alligare 90

SYNONYMS: None, mixture

CHEMICAL FAMILY: Nonionic Surfactant

GENERIC DESCRIPTION: Nonionic Surfactant Blend

MOLECULAR WEIGHT: Not applicable, mixture

2. HAZARDOUS INGREDIENTS

OSHA REGULATED

COMPONENT	CAS. NO	WT%	EXPOSURE LIMITS
None			

Maximum of 1 ppm Ethylene Oxide (EO) (75-21-8) May be present in the product. The OSHA PEL and ACGIH TLV for EO is 1 ppm.
(EO Statement for any formula containing a component that is ethoxylated-REMOVE THIS INSTRUCTION and change paragraph to Black)

3. EFFECTS OF OVEREXPOSURE

INHALATION: Inhalation not likely. Mist may cause irritation of the respiratory tract.

SKIN CONTACT: Brief contact is not irritating. Prolonged contact may cause redness.

EYE CONTACT: Slightly irritating. May cause redness, irritation.

INGESTION: May cause abdominal discomfort, nausea, vomiting and diarrhea.

OTHER HEALTH EFFECTS: None

The above listed potential effects of overexposure are based on actual data, results of studies performed upon similar compositions, component data, and/or expert review of the product. Overexposure to any chemical may result in enhancement of pre-existing and adverse medical condition and allergic reactions.

4. EMERGENCY FIRST AID

CALL A POISON CONTROL CENTER OR DOCTOR IMMEDIATELY FOR TREATMENT ADVICE.

IF SWALLOWED: Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes.

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth to mouth if possible.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses if present, after the first 5 minutes, then continue rinsing eye. Have the product container with you when calling a poison control center or doctor, or going for treatment.

5. REACTIVITY DATA

STABILITY: () unstable (x) stable

INCOMPATIBILITY (MATERIALS TO AVOID): Avoid strong oxidizing and reducing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Burning can produce carbon monoxide and/or carbon dioxide

HAZARDOUS POLYMERIZATION: () may occur (x) will not occur

CONDITIONS TO AVOID: Open flame or extreme heat.

6. PHYSICAL PROPERTIES

APPEARANCE AND ODOR: Light, golden liquid

BOILING POINT: NA

SPECIFIC GRAVITY: (Water=1) 1.03 +/- .05

VAPOR DENSITY: NA

VAPOR PRESSURE: NA

EVAPORATION RATE: (butyl acetate = 1) NA

SOLUBILITY IN WATER: Soluble

7. NFPA HAZARD RATING (National Fire Protection Association)

Flammability	1	Health: Exposure could cause irritation but only minor residual injury even if no treatment is given.
Health	1	0 Instability
Special Hazard		Instability: Normally stable, even under fire exposure conditions, and are not reactive with water.

8. FIRE AND EXPLOSION HAZARD INFORMATION**FLASHPOINT:** >200 °F**FLAMMABLE LIMITS:** NA**EXTINGUISHING MEDIA:** Foam, Water fog, Dry chemical, ABC fire extinguisher.**SPECIAL FIRE FIGHTING PROCEDURES:** Self-contained positive breathing apparatus and protective clothing should be worn.**UNUSUAL FIRE HAZARD:** None known**9. SPECIAL PRECAUTIONS****HANDLING AND STORAGE:** Use with adequate ventilation. Wash thoroughly after handling. Keep away from heat, sparks and flames.**OTHER PRECAUTIONS:** Keep in original container tightly closed. Do not reuse empty container. Avoid contact with eyes, skins, and clothing. Do not store with food, feed, or other material to be used or consumed by humans or animals.**10. SPECIAL PROTECTION INFORMATION****RESPIRATORY PROTECTION:** Appropriate to chemical.**VENTILATION:** Adequate ventilation.**PROTECTIVE GLOVES:** Impervious.**EYE PROTECTION:** Wear chemical safety goggles. Do not wear contact lenses.**11. SPILL OR LEAK PROCEDURES****SPILLS OR RELEASES:** If material is released or spilled wear eye and skin protection. Floor may be slippery; use care to avoid falling. Contain spill immediately with inert materials (e.g. sand, earth). Avoid discharge to natural waters. Transfer liquids and solid diking material to suitable containers for recovery or disposal.**WASTE DISPOSAL:** Do not contaminate water, food or feed by storage or disposal. Dispose of in an approved waste disposal facility in accordance with all Federal, State, and Local Regulations.**CONTAINER DISPOSAL:** Offer container for recycling or dispose of in a sanitary landfill or by other procedures approved by local regulations.**12. REGULATORY INFORMATION**

COMPOUNDS WHICH REQUIRE REPORTING UNDER SARA TITLE III

Sara Regulated Compounds	Section	CAS NO.	Percent
None Known			

13. OTHER INFORMATION**WARNING!** This product contains a detectable amount of ethylene oxide, which is known to the State of California to cause cancer and/or reproductive toxicity.

Ethoxylated products may contain residual amounts of ethylene oxide (EO) which can accumulate in the container headspace and be released into the ambient environment. This process is enhanced when the product is agitated, as during tank car loading and unloading, and blending operations. Ethylene oxide causes tumors in laboratory animals. The Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) for EO is 1 ppm for an eight-hour time weighted average exposure. The standard regulates occupational exposure to EO from all sources, including products containing residual EO. It is the responsibility of the employer to comply with OSHA ethylene oxide standard (29 CFR 1910.1047).

The recommendation for safe handling and protection procedures is believed to be generally suitable for the standard uses of this compound. However, each user should identify his intended uses of this material and determine whether they are appropriate. All data included in this document is released as typical values and should not be utilized to determine the suitability of this material for a particular use or purpose. No warranty, either expressed or implied, is hereby made, nor do we give permission, inducement, or recommendations to practice any patented invention without a license. All data is offered for consideration, investigation, and verification purposes only.

MATERIAL SAFETY DATA SHEET

Alligare Diuron 80DF

Alligare, LLC
Emergency Phone: Chemtrec 800-424-9300
Effective Date: May 08, 2007

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Alligare Diuron 80DF
DESCRIPTION: A dry-flowable herbicide.
EPA Reg. No.: 81927-12

COMPANY IDENTIFICATION:

Alligare, LLC
13 North 8th Street
Opelika, AL 36801

2. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	Chemical Name	Formula	CAS #	Composition
Diuron	3-(3,4-dichlorophenyl)-1,1-dimethylurea	C ₉ H ₁₀ Cl ₂ N ₂ O	330-54-1	80%

3. HAZARD IDENTIFICATION

Health Hazards: Harmful if swallowed. Causes moderate eye irritation.

Physical Hazards: May release irritating or toxic fumes if burned.

Environmental Hazards: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not apply when weather conditions favor drift from areas treated. Cover or incorporate spills.

4. FIRST AID

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

5. FIRE-FIGHTING MEASURES

Flash point: Not combustible.

Flammable Limits (LFL-UFL): N/A

Fire and Explosion Hazards: May thermally decompose in fire releasing irritating and toxic fumes.

Extinguishing Medium: Foam, CO₂, dry chemical, or water spray (water stream may spread flames).

Fire Fighting Equipment: Firefighters should be equipped with self-contained positive pressure breathing apparatus and turnout gear.

Fire Fighting Instructions: Evacuate area of all unnecessary personnel and fight fire from a safe distance upwind. Contain contaminated water / firefighting water; do not allow to enter drains or waterways. Foam or dry chemical fire extinguishing systems are preferred to prevent environmental damage from excessive water runoff.

NFPA Ratings: Health – 2 / Flammability – 0 / Reactivity - 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Isolate area and keep unnecessary and unprotected personnel from entering. Wear suitable personal protective clothing and equipment as described in Section 8 of this document. Extinguish sources of ignition nearby and downwind and ensure adequate ventilation.

Environmental Precautions: Do not discharge into soil / subsoil or into drains / surface water / groundwater.

Large Spills: Dike spillage and recover and retain as much free liquid as possible for reuse. Pick up remainder with suitable absorbent material. If spilled on the ground, the affected area should be excavated to a depth of 1 - 2 inches. Place into suitable containers for reuse or disposal in a licensed facility. After removal, thoroughly clean contaminated area with water. Collect wash water for approved disposal. Make sure that tools and equipment are adequately decontaminated.

7. HANDLING AND STORAGE

Handling: Wear appropriate personal protective clothing and equipment (see Section 8 below). Use only in a well-ventilated area. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling. Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Storage: Keep out of reach of children and animals. Store product in original container only, away from other pesticides, fertilizer, food, or feed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Pesticide Applicators and Workers: Refer to the product label attached to the product.

Engineering Controls: Workplace should be equipped with a shower and eye-wash station.

Personal Protective Equipment (PPE):

Handlers must wear long-sleeved shirt and long pants, chemical-resistant gloves made of any waterproof material (such as polyethylene or polyvinylchloride), dust / mist respirator, shoes plus socks.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Off-white granules

Odor: Slightly sweet

pH: 8.4 – 8.6

Bulk Density: 0.62 g/mL (5.17 lbs/gal)

Solubility: Soluble

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal use and storage conditions. May decompose if heated.

CONDITIONS TO AVOID: Excessive heat.

SUBSTANCES TO AVOID: None known.

HAZARDOUS REACTIONS: This product is chemically stable and no hazardous reactions should occur if stored and handled as prescribed / indicated.

HAZARDOUS DECOMPOSITION PRODUCTS: When thermally decomposed, may release hazardous and / or toxic fumes (hydrogen chlorides, oxides of carbon and nitrogen).

HAZARDOUS POLYMERIZATION: Does not occur.

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL TOXICITY

LD₅₀ (rat): 1,879 mg/kg

ACUTE DERMAL TOXICITY

LD₅₀ (rabbit): > 5,000 mg/kg

ACUTE INHALATION TOXICITY

LC₅₀ (rat): > 2.03 mg/L

EYE IRRITATION: Mildly Irritating

SKIN IRRITATION: Non-irritating

SKIN SENSITIZATION: Not a contact sensitizer

CARCINOGENICITY:

ACGIH: Not Listed

IARC: Not Listed

NTP: Not Listed

OSHA: Not Listed

MUTAGENIC TOXICITY: No data available.

REPRODUCTIVE TOXICITY: No data available.

12. ECOLOGICAL INFORMATION

Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. Do not contaminate water used for irrigation or domestic purposes.

13. DISPOSAL CONSIDERATIONS

Do not contaminate water, food or feed by disposal.

PESTICIDE DISPOSAL: Do not contaminate water, food, or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Do not reuse container. Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill, or incineration; if allowed by State and local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORT INFORMATION

Containers < 125 lbs: Not Regulated by DOT

Containers ≥ 125 lbs:

DOT PROPER SHIPPING NAME: UN3077, Environmentally Hazardous Substance, Solid, N.O.S.
(Diuron 80%), 9, PG III

REPORTABLE QUANTITY: 100 lbs.

DOT EMERGENCY RESPONSE GUIDE: 171

MARINE POLLUTANT: No

15. REGULATORY INFORMATION

FIFRA –

All pesticides are governed under the Federal Insecticide, Fungicide, and Rodenticide Act. The regulatory information presented below is pertinent only when this product is handled outside of the normal use and application as a pesticide.

SARA Title III – Section 302 Extremely Hazardous Substances

Not listed

SARA Title III – Section 311/312 Hazard Categories
Immediate, Delayed

SARA Title III – Section 312 Threshold Planning Quantity

The threshold planning quantity (TPQ) for this product treated as a mixture is 10,000 lbs. This product contains no ingredients with a TPQ of less than 10,000 lbs.

SARA Title III – Section 313 Reportable Ingredients

Diuron (80%) CAS#: 330-54-1

CERCLA –

Diuron – 100 lbs. (\geq 125 lbs. of product)

California Prop 65 Status –

This product contains a substance (Diuron) known to the state of California to cause cancer.

16. OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR.

DISCLAIMER:

THE INFORMATION IN THIS MSDS IS BASED ON DATA AVAILABLE AS OF THE REVISION DATE GIVEN HEREIN, AND BELIEVED TO BE CORRECT. CONTACT ALLIGARE, LLC TO CONFIRM IF YOU HAVE THE MOST CURRENT MSDS. JUDGMENTS AS TO THE SUITABILITY OF THE INFORMATION HEREIN FOR THE INDIVIDUAL'S OWN USE OR PURPOSES IS NECESSARILY THE INDIVIDUAL'S OWN RESPONSIBILITY. ALTHOUGH REASONABLE CARE HAS BEEN TAKEN IN THE PREPARATION OF SUCH INFORMATION, ALLIGARE, LLC EXTENDS NO WARRANTIES, MAKES NO REPRESENTATIONS, AND ASSUMES NO RESPONSIBILITY AS TO THE ACCURACY OR SUITABILITY OF SUCH INFORMATION FOR APPLICATION TO THE INDIVIDUAL'S PURPOSES OR THE CONSEQUENCES OF ITS USE.

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

MATERIAL SAFETY DATA SHEET

Glyphosate 4 Plus Herbicide

Emergency Phone: Chemtrec 800-424-9300

Effective Date: February 13, 2007

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Glyphosate 4 Plus

Active Ingredient: Glyphosate (in the form of its isopropylamine salt)

Chemical Name: N-(phosphonomethyl)glycine

Chemical Formula: $C_6H_{17}N_2O_5P$

COMPANY IDENTIFICATION:

Alligare, LLC

13 North 8th Street

Opelika, KS 36801

2. COMPOSITION / INFORMATION ON INGREDIENTS

Glyphosate Isopropylamine Salt

CAS No. 38641-94-0

41.0%

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Causes moderate eye irritation. Harmful if swallowed or inhaled. Avoid breathing vapor or spray mist. Avoid contact with eyes, skin or clothing.

POTENTIAL HEALTH HAZARDS:

EYE – Moderate eye irritant. Undiluted product may cause pain, redness and tearing.

SKIN - May be slightly irritating to the skin.

INGESTION - No more than slightly toxic and no significant adverse health effects are expected to develop if a small amount (less than a mouthful) is swallowed.

POTENTIAL PHYSICAL HAZARDS:

May react with metals such as galvanized or mild steel to produce hydrogen gas, potentially forming a highly combustible gas mixture.

4. FIRST AID

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or a doctor.

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration (preferably by mouth-to-mouth) if possible.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information..

5. FIRE-FIGHTING MEASURES

Flash point: Will not flash

Flammable Limits (LFL-UFL): N/A

Fire and Explosion Hazards: During a fire, product may generating irritating or toxic gasses through thermal decomposition.

Means of Extinction: Use water spray, foam or dry chemical.

Fire Fighting Instructions: Evacuate area and fight fire from a safe distance. Approach from upwind to avoid hazardous vapors and decomposition products. A foam or dry chemical fire extinguishing system is preferred to prevent environmental damage from excessive water run off. If water is used, avoid heavy hose streams. If possible, dike and collect water used to fight fire to prevent/minimize run off.

Firefighting Equipment: Self-contained breathing apparatus with full face piece. Wear full firefighting turn-out gear (Bunker gear).

Hazardous Combustion Products: Carbon monoxide, nitrogen oxides, phosphorous oxides.

6. ACCIDENTAL RELEASE MEASURES

Clean up spills immediately. Isolate and post spill area. Wear protective clothing and personal protective equipment as prescribed in Section 8 "Exposure Controls/Personal Protection". Keep unprotected persons and animals out of area.

SMALL SPILL: Absorb spill with inert material such as dry sand, vermiculite or fuller's earth, then place in a chemical waste container.

LARGE SPILL: Dike large spills using absorbent or impervious material such as clay or sand. Recover and contain as much free liquid as possible for reuse. Allow absorbed material to solidify and scrape up for disposal. After removal, scrub the area with detergent and water and neutralize with dilute alkaline solutions of soda ash or lime.

7. HANDLING AND STORAGE

Keep out of reach of children and animals. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal. Wash thoroughly after handling this product.

Store above 10°F (-12°C) to keep product from crystallizing.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: To keep exposure to airborne contaminants below exposure limits, proper ventilation is required when handling or using this product. Local mechanical exhaust ventilation may be required. Facilities storing or using this material should be equipped with an eyewash facility and a safety shower.

Eyewear: Safety goggles are recommended when mixing, loading or cleaning equipment.

Clothing: All pesticide handlers must wear a long-sleeved shirt and long pants and shoes plus socks.

Gloves: Waterproof gloves are recommended when mixing, loading or cleaning equipment.

NOTE: Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear yellow to amber liquid

Odor: Slight amine odor

pH: 4.4

Flashpoint (PMA-4): N/A

Specific Gravity: 1.17 g/ml

Solubility in Water: Emulsifies

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Avoid temperatures above 115°F (46°C) and below 25°F (-5°C)

CHEMICAL STABILITY: Product is normally stable. However, product may decompose if heated.

HAZARDOUS DECOMPOSITION PRODUCTS: Heat and fire may result in thermal decomposition and the release of nitrogen oxides, phosphorous oxides and carbon monoxide.

INCOMPATIBILITY WITH OTHER MATERIALS: Strong oxidizers and bases, mild and galvanized steel.

POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL TOXICITY

Oral LD₅₀ (rat): > 5,000 mg/kg

ACUTE DERMAL TOXICITY

Dermal LD₅₀ (rat, male): > 5,000 mg/kg

ACUTE INHALATION TOXICITY

Inhalation LC₅₀ (rat): > 2.5 mg/L

EYE IRRITANT

Rabbit – Moderate

SKIN IRRITATION

Rabbit – Mild

SENSITIZATION

Guinea pig – Non-Sensitizer

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

CARCINOGENICITY:

ACGIH: Not listed

IARC: Not listed

NTP: Not listed

OSHA: Not listed

MUTAGENIC DATA: No evidence of mutagenic effects during *in vivo* and *in vitro* assays.

ADDITIONAL DATA: None.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

MAMMILIAN TOXICITY

This product is considered to be relatively nontoxic to dogs and other domestic animals; however, ingestion of this product or large amounts of freshly sprayed vegetation may result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours.

FISH TOXICITY

96 hour LC₅₀, Rainbow trout – 8.2 µg/L (technical)

96 hour LC₅₀, Bluegill – 5.8 µg/L (technical)

AVIAN TOXICITY

Oral LD₅₀, Bobwhite quail – > 3,800 mg/kg (technical)

BEE TOXICITY: Non-toxic.

13. DISPOSAL CONSIDERATIONS

PESTICIDE DISPOSAL: Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed.

CONTAINER DISPOSAL: For plastic containers, triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For refillable containers, do not reuse the container except for refill in accordance with a valid Alligare Repackaging or Toll Repackaging Agreement. If not refilled or returned to the authorized repackaging facility, triple rinse container, then puncture and dispose of in a sanitary landfill, or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For bulk containers, triple rinse (or equivalent) and wash with appropriate cleaners before reusing.

14. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME: Not regulated by DOT.

DOT HAZARD CLASS OR DIVISION: N/A

DOT UN/NA NUMBER: N/A

DOT PACKING GROUP: N/A

REPORTABLE QUANTITY: None

MARINE POLLUTANT: Not Listed

DOT EMERGENCY RESPONSE GUIDE: N/A

15. REGULATORY INFORMATION

FIFRA –

All pesticides are governed under the Federal Insecticide, Fungicide, and Rodenticide Act. The regulatory information presented below is pertinent only when this product is handled outside of the normal use and application as a pesticide.

OSHA HAZARD COMMUNICATION STANDARD STATUS: Not Regulated

SARA Title III – Section 302 Extremely Hazardous Substances

Not listed

SARA Title III – Section 311/312 Hazard Categories

Immediate

SARA Title III – Section 312 Threshold Planning Quantity

The threshold planning quantity (TPQ) for this product treated as a mixture is 10,000 lbs. This product contains no ingredients with a TPQ of less than 10,000 lbs.

SARA Title III – Section 313 Reportable Ingredients

None

CERCLA –

None

CALIFORNIA PROP 65 STATUS –

Not listed

16. OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR.

DISCLAIMER:

Alligare, LLC (the Company) warrants that this product conforms to the chemical description on the label in all material respects and is reasonably fit for the purpose referred to in the directions for use, subject to the exceptions noted below, which are beyond the Company's control. To the extent consistent with applicable law, the Company makes no other representation or warranty, express or implied, concerning the product, including no implied warranty of merchantability or fitness for a particular purpose. No such warranty shall be implied by law, and no agent or representative is authorized to make any such warranty on the Company's behalf.

To the extent consistent with applicable law, the exclusive remedy against the Company for any cause of action relating to the handling or use of this product is a claim for damages, and in no event shall damages or any other recovery of any kind exceed the price of the product which caused the alleged loss, damage, injury or other claim. To the extent consistent with applicable law, under no circumstances shall the Company be liable for any special, indirect, incidental or consequential damages of any kind, including loss of profits or income, and any such claims are hereby waived. Some states do not allow the exclusion or limitation of incidental or consequential damages.



MATERIAL SAFETY DATA SHEET

SUPER MARKING DYE

MSDS DATE: 4/17/08

SUPERSEDES: NONE

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: SUPER MARKING DYE

MANUFACTURER: Alligare, LLC.
ADDRESS: 13 N. 8th Street, Opelika, AL 36801

CHEMTREC PHONE: US: 1-800-424-9300 International: 1-202-483-7616

CHEMICAL NAME: Proprietary mixture
CHEMICAL FAMILY: Colorant
CHEMICAL FORMULA: Mixture

PRODUCT USE: Aquatic colorant

SECTION 1 NOTES: None

SECTION 2: HAZARDOUS INGREDIENTS

INGREDIENT	CAS NO.	% WT/% VOL	SARA 313 REPORTABLE	TWA	OSHA STEL	Ceiling	TWA	ACGIH STEL	Ceiling
None									

SECTION 2 NOTES: None

SECTION 3: HAZARDS IDENTIFICATION

ROUTES OF ENTRY: Eyes, skin, ingestion, inhalation

POTENTIAL HEALTH EFFECTS

EYES: May cause irritation and redness

SKIN: May cause irritation and redness

INGESTION: May cause nausea, abdominal discomfort and diarrhea

INHALATION: Spray mist may be irritating to lungs

ACUTE HEALTH HAZARDS: None beyond above

CHRONIC HEALTH HAZARDS: Repeated or extremely prolonged exposure may cause minor tissue damage

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Existing dermatitis may be exacerbated.

CARCINOGENICITY

OSHA: No ACGIH: No NTP: No IARC: No OTHER: No

SECTION 3 NOTES: None

SECTION 4: FIRST AID MEASURES

If in Eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses if present, after the first 5 minutes, then continue rinsing eye. Have the product container with you when calling a poison control center or doctor, or going for treatment.

If on Skin or Clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes.

If Swallowed: Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth to mouth if possible.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS:

SECTION 4 NOTES: None



MATERIAL SAFETY DATA SHEET
SUPER MARKING DYE

MSDS DATE: 4/17/08
SUPERSEDES: NONE

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR, UPPER: Unknown
(% BY VOLUME) LOWER: Unknown

FLASH POINT:
F: >200
C: >93

METHOD USED: PMCC

AUTOIGNITION TEMPERATURE:
F: Unknown
C: Unknown

NFPA HAZARD CLASSIFICATION

HEALTH: 1 FLAMMABILITY: 0 REACTIVITY: 0 OTHER: -

EXTINGUISHING MEDIA: Cool surrounding area.

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

HAZARDOUS DECOMPOSITION PRODUCTS: None

SECTION 5 NOTES: Product is extremely soluble in water and will turn water blue but is safe for aquatic environments

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: Small spills: Absorb with appropriate absorbent material or mop.
Large spills: Dike area and absorb with appropriate absorbent material.

SECTION 6 NOTES: None

SECTION 7: HANDLING AND STORAGE

HANDLING AND STORAGE: Store in a cool, dry place. Do not store near strong oxidizers.

SECTION 7 NOTES: None

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION : Normal ventilation will be adequate

RESPIRATORY PROTECTION: None required

EYE PROTECTION: Chemical goggles

SKIN PROTECTION: Wear rubber gloves

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Wear long sleeves and pants

WORK HYGIENIC PRACTICES: None

EXPOSURE GUIDELINES: None

SECTION 8 NOTES: Product will stain skin but if washed off immediately, will cause no damage



MATERIAL SAFETY DATA SHEET
SUPER MARKING DYE

MSDS DATE: 4/17/08
SUPERSEDES: NONE

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Deep blue

ODOR: None

PHYSICAL STATE: Liquid

pH AS SUPPLIED: ~4 - 5

pH (Other): Unknown

BOILING POINT:

F:	Unknown
C:	Unknown

MELTING POINT:

F:	Unknown
C:	Unknown

FREEZING POINT:

F:	Unknown
C:	Unknown

VAPOR PRESSURE (mmHg):

@

F:	Unknown
C:	Unknown

VAPOR DENSITY (AIR = 1):

@

F:	Unknown
C:	Unknown

SPECIFIC GRAVITY (H₂O = 1): ~1.14

@

F:	68
C:	20

EVAPORATION RATE: Slower than standard

BASIS (butyl acetate=1):

SOLUBILITY IN WATER: Soluble

VISCOSITY: Unknown

@

F:	
C:	

SECTION 9 NOTES: None

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable ☒ Unstable

CONDITIONS TO AVOID (STABILITY): None known

INCOMPATIBILITY (MATERIAL TO AVOID): Strong oxidizers

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: None known

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID (POLYMERIZATION): None known

SECTION 10 NOTES: None

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION: Not available

SECTION 11 NOTES: None



MATERIAL SAFETY DATA SHEET
SUPER MARKING DYE

MSDS DATE: 4/17/08
SUPERSEDES: NONE

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: Not available

SECTION 12 NOTES: None

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: May be absorbed and landfilled or disposed of according to all laws and regulations.

RCRA HAZARD CLASS: Not regulated

SECTION 13 NOTES: None

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION
PROPER SHIPPING NAME: Not regulated
HAZARD CLASS:
ID NUMBER:
PACKING GROUP:
LABEL STATEMENT:

OTHER AGENCIES: None

SECTION 14 NOTES: None

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS
TSCA (TOXIC SUBSTANCE CONTROL ACT): No

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT): Not regulated

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):

311/312 HAZARD CATEGORIES: Not listed

313 REPORTABLE INGREDIENTS: Not listed

STATE REGULATIONS: None

INTERNATIONAL REGULATIONS: None

SECTION 15 NOTES: None

SECTION 16: OTHER INFORMATION

OTHER INFORMATION: None

PREPARATION INFORMATION: Prepared on 4/17/08

DISCLAIMER:

The recommendation for safe handling and protection procedures is believed to be generally suitable for the standard uses of this compound. However, each user should identify his intended uses of this material and determine whether they are appropriate. All data included in this document is released as typical values and should not be utilized to determine the suitability of this material for a particular use or purpose. No warranty, either expressed or implied, is hereby made, nor do we give permission, inducement, or recommendations to practice any patented invention without a license. All data is offered for consideration, investigation and verification purposes only.

Alligare, LLC., 13 N. 8th Street, Opelika, AL 36801

MATERIAL SAFETY DATA SHEET

SFM Extra™ Herbicide

Alligare, LLC
Emergency Phone: Chemtrec 800-424-9300
Effective Date: February 1, 2007
EPA Reg. No. 81927-5

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT NAME: SFM Extra™
DESCRIPTION: Dispersible granule herbicide.

COMPANY IDENTIFICATION:

Alligare, LLC
13 North 8th Street
Opelika, AL 36801
888-255-4427

2. COMPOSITION / INFORMATION ON INGREDIENTS:

Ingredient	ChemicalName	Formula	CAS #	Composition
Sulfometuron-methyl	Methyl 2-[[[[(4,6-dimethyl-2-pyrimidinyl)amino]-carbonyl]amino]sulfonyl]benzoate	C ₁₅ H ₁₆ N ₄ O ₅ S	74222-97-2	56.25%
Metsulfuron-methyl	Methyl 2-[[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]-carbonyl]amino]sulfonyl]benzoate	C ₁₄ H ₁₅ N ₅ O ₆ S	74223-64-6	15.0%

3. HAZARD IDENTIFICATION

HAZARDS TO HUMANS AND DOMESTIC ANIMALS: Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing.

POTENTIAL HEALTH EFFECTS:

- Eye contact may cause eye irritation with tearing, pain and / or blurred vision.
- Repeated dermal contact may cause skin irritation with itching, burning, redness, swelling or rash.
- Ingestion of high doses of Sulfometuron Methyl may lead to red blood cell destruction.

ENVIRONMENTAL HAZARDS: This herbicide is injurious to plants at extremely low concentrations. Nontarget plants may be adversely affected from drift and run-off. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water.

4. FIRST AID

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

5. FIRE-FIGHTING MEASURES

Flash point: N/A

Flammable Limits (LEL): 0.092 g/L

Fire and Explosion Hazards: None known.

Means of Extinction: Use water spray, carbon dioxide, foam or dry chemical.

Fire Fighting Instructions: Evacuate area. If area is exposed to fire and conditions permit, allow fire to burn itself out. Dike runoff and do not allow runoff to enter sewers, storm drains or waterways. Thoroughly decontaminate firefighting equipment after use.

Firefighting Equipment: Self-contained breathing apparatus with full face piece and full bunker gear.

Hazardous Combustion Products: May produce irritating / toxic gasses and vapors.

6. ACCIDENTAL RELEASE MEASURES

Clean up spills immediately observing the precautions in Section 8 of this MSDS. Isolate the hazard area and keep unnecessary and unprotected personnel from entering. Prevent material from contaminating soil or from entering sewage and drainage systems and bodies of water.

SMALL SPILLS: Scoop up material and place in a container for reuse or disposal. Clean contaminated floors and objects thoroughly with water, observing all environmental regulations.

LARGE SPILLS: Avoid creating a dust cloud and take all possible measures to reduce airborne dust. Vacuum, shovel or sweep up material and place in a container for reuse or disposal. After removal, flush contaminated area thoroughly with water, observing all environmental regulations.

7. HANDLING AND STORAGE

Do not allow to come into contact with skin, eyes and clothing. Remove and wash contaminated clothing before reuse. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a secured storage area.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash station and a safety shower.

Protective Clothing: Long-sleeved shirt, long pants and shoes plus socks.

General: Wash thoroughly with soap and water after handling. Discard clothing and other absorbent materials that have been heavily contaminated with this product; do not reuse them. Follow the manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Fine light-tan powder

Odor: Faint sulfur odor

pH: 5.0 – 6.3

Bulk Density: 0.64 – 0.74 g/ml

Flashpoint (PMA-4): N/A

Solubility in Water: Insoluble

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Stable under normal use and transportation situations.

HAZARDOUS DECOMPOSITION PRODUCTS: Data not available.

INCOMPATIBILITY WITH OTHER MATERIALS: None known.

POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL TOXICITY

Oral LD₅₀ (rat): > 5,000 mg/kg

ACUTE DERMAL TOXICITY

Dermal LD₅₀ (rat): > 5,000 mg/kg

ACUTE INHALATION TOXICITY

Inhalation LC₅₀ (rat): > 5.3 mg/L

EYE IRRITANT

Rabbit – Mildly irritating

SKIN IRRITATION

Rabbit – Slight to mildly irritating

SENSITIZATION

Guinea Pig – Not a contact sensitizer

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

CARCINOGENICITY:

ACGIH: Not listed

IARC: Not listed

NTP: Not listed

OSHA: Not listed

MUTAGENIC DATA: No evidence of mutagenic effects during *in vivo* and *in vitro* assays.

ADDITIONAL DATA: Not known to cause reproductive or birth defects at normal exposure levels.

12. ECOLOGICAL INFORMATION

This herbicide is injurious to plants at extremely low concentrations. Nontarget plants may be adversely affected from drift and run-off. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water.

13. DISPOSAL CONSIDERATIONS

Do not contaminate water, food or feed by disposal.

PESTICIDE DISPOSAL: Pesticide wastes are toxic. Improper disposal of excess pesticide, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME: Not Regulated by DOT

DOT HAZARD CLASS OR DIVISION: N/A

DOT UN/NA NUMBER: N/A
DOT PACKING GROUP: N/A
REPORTABLE QUANTITY: N/A
MARINE POLLUTANT: Not Listed
DOT EMERGENCY RESPONSE GUIDE: N/A

15. REGULATORY INFORMATION

FIFRA –

All pesticides are governed under the Federal Insecticide, Fungicide, and Rodenticide Act. The regulatory information presented below is pertinent only when this product is handled outside of the normal use and application as a pesticide.

SARA Title III – Section 302 Extremely Hazardous Substances

Not Listed

SARA Title III – Section 311/312 Hazard Categories

Immediate

SARA Title III – Section 312 Threshold Planning Quantity

N/A

SARA Title III – Section 313 Reportable Ingredients

None

CERCLA –

Not Listed

CALIFORNIA PROP 65 STATUS –

Not Listed

16. OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR.

DISCLAIMER:

THE INFORMATION IN THIS MSDS IS BASED ON DATA AVAILABLE AS OF THE REVISION DATE GIVEN HEREIN, AND BELIEVED TO BE CORRECT. CONTACT ALLIGARE, LLC TO CONFIRM IF YOU HAVE THE MOST CURRENT MSDS. JUDGMENTS AS TO THE SUITABILITY OF THE INFORMATION HEREIN FOR THE INDIVIDUAL'S OWN USE OR PURPOSES IS NECESSARILY THE INDIVIDUAL'S OWN RESPONSIBILITY. ALTHOUGH REASONABLE CARE HAS BEEN TAKEN IN THE PREPARATION OF SUCH INFORMATION, ALLIGARE, LLC EXTENDS NO WARRANTIES, MAKES NO REPRESENTATIONS, AND ASSUMES NO RESPONSIBILITY AS TO THE ACCURACY OR SUITABILITY OF SUCH INFORMATION FOR APPLICATION TO THE INDIVIDUAL'S PURPOSES OR THE CONSEQUENCES OF ITS USE.

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Brooklyn Residuals
1997 - 2011

FACILITY ID	MANIFEST NO	RIPR NO	TRANS	DISPOSER	TSDF Date	SHIP Num	RESIDUAL TYPE	STREAM DESC	#	CONT.	AMT	UNITS	LBS	TONS
58603	37931	83085	EQ-NORTHEA	PHILIP SERVICES, REPUBLIC DIV	08/05/10	DOT027	DOT-HAZARDOUS	ASBESTOS, NON-FRIABLE	1	CM	3.5	T	7000	3.5
58603	37932	83085	EQ-NORTHEA	PHILIP SERVICES, REPUBLIC DIV	08/05/10	DOT027	DOT-HAZARDOUS	ASBESTOS, NON-FRIABLE	1	CM	1.09	T	2180	1.09
58603	129		FRANKLIN	NORTHLAND ENVIRONMENTAL, INC.	07/18/01	NH5180	NON-HAZARDOUS	BLASTING GRIT W/ EPOXY COAT	1	DM	800	P	800	0.4
58603	219		FRANKLIN	NORTHLAND ENVIRONMENTAL, INC.	08/01/01	NH0015	NON-HAZARDOUS	BLASTING GRIT	2	DM	1600	P	1600	0.8
58603	408		FRANKLIN	NORTHLAND ENVIRONMENTAL, INC.	10/19/01	NH0015	NON-HAZARDOUS	BLASTING GRIT	12	DM	9600	P	9600	4.8
58603	415		FRANKLIN	NORTHLAND ENVIRONMENTAL, INC.	10/19/01	NH0001	NON-HAZARDOUS	SOIL (CUTTINGS/BORING)	1	DM	400	P	400	0.2
58603	853		FREEHOLD	REPUBLIC ENV SYS (PA), INC.	11/12/02	NH0015	NON-HAZARDOUS	BLASTING GRIT	1	CM	10	T	0	0
58603	904		FRANKLIN	NORTHLAND ENVIRONMENTAL, INC.	01/23/03	NH0015	NON-HAZARDOUS	BLASTING GRIT	6	DM	3500	P	3500	1.75
58603	1508	56304	EQ-NORTHEA	CASIE ECOLOGY OIL SALVAGE, INC	12/22/06	NH0015	NON-HAZARDOUS	BLASTING GRIT	9	DM	6300	P	6300	3.15
58603	20393	78389	AUCHTER-NJ	CASIE ECOLOGY OIL SALVAGE, INC	06/26/09	NH5154	NON-HAZARDOUS	HOSES, OLD/USED	1	CM	2000	P	2000	1
58603	32736		LORCO	CASIE ECOLOGY OIL SALVAGE, INC	05/17/00	NH0022	NON-HAZARDOUS	SOIL WITH GASOLINE	3	DM	1200	P	1200	0.6
58603	50105		SJ	SAFETY-KLEEN (TS), INC.	01/07/97	NH5066	NON-HAZARDOUS	BLASTING GRIT AND SOIL	1	CM	20	Y	33686.9	16.84345
58603	52252-A		MANGIARDI	CWA, INC.	08/24/99	NH0022	NON-HAZARDOUS	SOIL WITH GASOLINE	1	DT	30.2	T	0	0
58603	52252-B		MANGIARDI	CWA, INC.	08/24/99	NH0022	NON-HAZARDOUS	SOIL WITH GASOLINE	1	DT	30.4	T	0	0
58603	52252-C		MANGIARDI	CWA, INC.	08/24/99	NH0022	NON-HAZARDOUS	SOIL WITH GASOLINE	1	DT	29.4	T	0	0
58603	52252-D		MANGIARDI	CWA, INC.	08/24/99	NH0022	NON-HAZARDOUS	SOIL WITH GASOLINE	1	DT	15.7	T	0	0
58603	53683		LORCO	CASIE ECOLOGY OIL SALVAGE, INC	12/04/00	NH0015	NON-HAZARDOUS	BLASTING GRIT	5	DM	2000	P	2000	1

FACILITY ID	MANIFEST NO	RIPR NO	TRANS	DISPOSER	TSDF Date	SHIP Num	RESIDUAL TYPE	STREAM DESC	#	CONT.	AMT	UNITS	LBS	TONS
58603	57241	26274	EQ-NE	PHILIP SERVICES, REPUBLIC DIV	08/25/03	NH5033	NON-HAZARDOUS	SPENT CARBON	1	CM	12.3	T	0	0
58603	57241 A	26274	EQ-NE	PHILIP SERVICES, REPUBLIC DIV	08/21/03	NH5033	NON-HAZARDOUS	SPENT CARBON	1	CM	7	T	0	0
58603	57241 B	26274	EQ-NE	PHILIP SERVICES, REPUBLIC DIV	01/05/04	NH5033	NON-HAZARDOUS	SPENT CARBON	6	CF	2.3	T	0	0
58603	57672	28096	EQ-NE	NORTHLAND ENVIRONMENTAL, INC.	09/25/03	NH5045	NON-HAZARDOUS	FILTERS, GASOLINE	4	DM	400	P	400	0.2
58603	57869	29059	EQ-NE	MICHIGAN DISPOSAL WASTE TREAT.	02/09/04	NH5096	NON-HAZARDOUS	TANK WIPER SEAL	8	DM	800	P	800	0.4
58603	59202	35220	EQ-NE	AARON OIL COMPANY, INC.	07/29/04	NH5151	NON-HAZARDOUS	FILTERS, USED OIL METAL	1	DM	200	P	200	0.1
58603	60240	39928	EQ-NE	NORTHLAND ENVIRONMENTAL, INC.	02/11/05	NH0015	NON-HAZARDOUS	BLASTING GRIT	3	DM	2200	P	2200	1.1
58603	61828	47747	EQ-NE	MICHIGAN DISPOSAL WASTE TREAT.	11/10/05	NH0015	NON-HAZARDOUS	BLASTING GRIT	14	DM	10000	P	10000	5
58603	62077	88815	EQ-NORTHEA	NORTHLAND ENVIRONMENTAL, INC.	07/05/11	NH0015	NON-HAZARDOUS	BLASTING GRIT	4	DM	2000	P	2000	1
58603	63463	55278	EQ-NORTHEA	CASIE ECOLOGY OIL SALVAGE, INC	09/07/06	NH0015	NON-HAZARDOUS	BLASTING GRIT	25	DM	20000	P	20000	10
58603	77642	90334	EQ-NORTHEA	NORTHLAND ENVIRONMENTAL, INC.	10/14/11	NH5277	NON-HAZARDOUS	SLUDGE, STRIP DRAIN	2	DM	400	P	400	0.2
58603	77700	79625	EQ-NORTHEA	INTERNATIONAL PETROLEUM CORP.	09/15/09	RC0068	NON-HAZARDOUS	USED OIL	1	TT	250	G	2085.1	1.04255
58603	907565	83647	LORCO	LORCO PETROLEUM	05/20/10	NH0001	NON-HAZARDOUS	SOIL (CUTTINGS/BORING)	6	DM	3000	P	3000	1.5
58603	907579	81885	LORCO	CASIE ECOLOGY OIL SALVAGE, INC	01/14/10	NH5474	NON-HAZARDOUS	SOIL W/ GASOLINE & DIESEL	10	DM	5000	P	5000	2.5
58603	75228		LAIDLAW-M	SAFETY-KLEEN (TS), INC.	11/26/96	RCRA5059	RCRA-HAZARDOUS	ABSORBENT MATERIAL WITH PET.	1	DM	55	G	458.7	0.22935
58603	75608		LAIDLAWTRN	SAFETY-KLEEN (TS), INC.	02/12/98	RCRA5078	RCRA-HAZARDOUS	ABSORBENT MAT. W/ GASOLINE	1	DM	55	G	458.7	0.22935
58603	7805213JK	85170	EQ-NORTHEA	PURE EARTH RECYCLING (NJ), INC.	09/22/10	RCRA6387	RCRA-HAZARDOUS	PAINT CHIPS	1	DF	5	P	5	0.0025
58603	43		FRANKLIN	CASIE ECOLOGY OIL SALVAGE, INC	04/30/01	RP00062	RECOVERABLE	ABSORBENT MAT. W/ GASOLINE	1	DM	150	P	150	0.075

FACILITY ID	MANIFEST NO	RIPR NO	TRANS	DISPOSER	TSDF Date	SHIP Num	RESIDUAL TYPE	STREAM DESC	#	CONT.	AMT	UNITS	LBS	TONS
58603	143		FRANKLIN	AARON OIL COMPANY, INC.	07/16/01	RP00062	RECOVERABLE	ABSORBENT MAT. W/ GASOLINE	1	DM	100	P	100	0.05
58603	427		FRANKLIN	AARON OIL COMPANY, INC.	10/24/01	RP00062	RECOVERABLE	ABSORBENT MAT. W/ GASOLINE	1	DM	100	P	100	0.05
58603	530		FRANKLIN	AARON OIL COMPANY, INC.	04/03/02	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	1		300	P	300	0.15
58603	572		FRANKLIN	AARON OIL COMPANY, INC.	04/03/02	RP0051	RECOVERABLE	FILTERS, GASOLINE	1	DM	300	P	300	0.15
58603	656		FRANKLIN	AARON OIL COMPANY, INC.	07/25/02	RP0051	RECOVERABLE	FILTERS, GASOLINE	2		500	P	500	0.25
58603	671		FRANKLIN	AARON OIL COMPANY, INC.	07/25/02	RP0099	RECOVERABLE	SLUDGE, OIL/WATER SEPARATOR	6	DM	3600	P	3600	1.8
58603	852		FRANKLIN	AARON OIL COMPANY, INC.	12/05/02	RP0051	RECOVERABLE	FILTERS, GASOLINE	12	DM	2400	P	2400	1.2
58603	27445	82042	LORCO	LORCO PETROLEUM	02/04/10	RP0001	RECOVERABLE	GROUNDWATER - GASOLINE	1	DM	60	G	500.42	0.25021
58603	13863	67280	LORCO	CASIE ECOLOGY OIL SALVAGE, INC	02/28/08	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	2	DM	200	P	200	0.1
58603	14588	56893	LORCO	CASIE ECOLOGY OIL SALVAGE, INC	11/08/06	RP0130	RECOVERABLE	SLUDGE, OIL/WATER SEPARATOR	18	DM	900	G	7506	3.753
58603	14598	57039	LORCO	LORCO PETROLEUM	11/22/06	RP0130	RECOVERABLE	SLUDGE, OIL/WATER SEPARATOR	4	DM	200	G	1668	0.834
58603	14902	57044	LORCO	CASIE ECOLOGY OIL SALVAGE, INC	11/27/06	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	4	DM	2000	P	2000	1
58603	151300	84546	EQ-NORTHEA	INTERNATIONAL PETROLEUM CORP.	07/13/10	RP0044	RECOVERABLE	SLUDGE, TANK BOTTOM	1	TT	2000	G	16680.6	8.3403
58603	16195	90607	LORCO	LORCO PETROLEUM	08/29/11	RP0118	RECOVERABLE	WATER/DIESEL/ GASOLINE	1	TT	385	G	3211	1.6055
58603	16340	56892	AUCHTER-NJ	LORCO PETROLEUM	11/02/06	RP0130	RECOVERABLE	SLUDGE, OIL/WATER SEPARATOR	1	TT	1147	G	9566	4.783
58603	16341	56892	AUCHTER-NJ	LORCO PETROLEUM	11/01/06	RP0130	RECOVERABLE	SLUDGE, OIL/WATER SEPARATOR	1	TT	1400	G	11676	5.838
58603	16691	56892	AUCHTER-NJ	LORCO PETROLEUM	11/02/06	RP0130	RECOVERABLE	SLUDGE, OIL/WATER SEPARATOR	1	TT	900	G	7506	3.753
58603	19674	70608	AUCHTER-NJ	LORCO PETROLEUM	06/25/08	FLD268	RECOVERABLE	FUEL OIL AND WATER	1	TT	3050	G	25437	12.7185
58603	19969	74102	AUCHTER-NJ	CASIE ECOLOGY OIL SALVAGE, INC	01/08/09	RP0044	RECOVERABLE	SLUDGE, TANK BOTTOM	1	CM	9.42	T	18840	9.42
58603	20391	78639	AUCHTER-NJ	LORCO PETROLEUM	06/29/09	RP0132	RECOVERABLE	SLUDGE, DIESEL TANK BOTTOM	1	TT	1300	G	10842	5.421

FACILITY ID	MANIFEST NO	RIPR NO	TRANS	DISPOSER	TSDF Date	SHIP Num	RESIDUAL TYPE	STREAM DESC	#	CONT.	AMT	UNITS	LBS	TONS
58603	20772	80867	AUCHTER-NJ	LORCO PETROLEUM	11/04/09	RP0130	RECOVERABLE	SLUDGE, OIL/WATER SEPARATOR	1	TT	2100	G	17514.6	8.7573
58603	20815	81613	AUCHTER-NJ	LORCO PETROLEUM	12/18/09	RP0044	RECOVERABLE	SLUDGE, TANK BOTTOM	1	TT	2800	G	23352.8	11.6764
58603	21602	82248	AUCHTER-NJ	LORCO PETROLEUM	02/04/10	RP0115	RECOVERABLE	ETHANOL AND WATER	1	TT	403	G	3361.1	1.68055
58603	21949	64566	LORCO	CASIE ECOLOGY OIL SALVAGE, INC	10/24/07	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	2	DM	200	P	200	0.1
58603	22500	89808	EQ-NORTHEA	LORCO PETROLEUM	08/03/11	RP0078	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	5200	G	43369.5	21.68475
58603	26145	76543	LORCO	CASIE ECOLOGY OIL SALVAGE, INC	03/18/09	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	5	DM	250	P	250	0.125
58603	269329	83373	EQ-NORTHEA	INTERNATIONAL PETROLEUM CORP.	04/22/10	RP0044	RECOVERABLE	SLUDGE, TANK BOTTOM	1	TT	1400	G	11676.4	5.8382
58603	274700	83934	EQ-NORTHEA	INTERNATIONAL PETROLEUM CORP.	05/28/10	RP0118	RECOVERABLE	WATER/DIESEL/ GASOLINE	1	TT	4800	G	40033.3	20.01665
58603	274705	84317	EQ-NORTHEA	INTERNATIONAL PETROLEUM CORP.	06/24/10	RP0130	RECOVERABLE	SLUDGE, OIL/WATER SEPARATOR	1	TT	5156	G	43002.5	21.50125
58603	40439		MILLER	AARON OIL COMPANY, INC.	11/03/97	NH5129	RECOVERABLE	SLUDGE, PETRO. PDX TK BOTTOM	1	TT	955	G	7964.7	3.98235
58603	53102		FRANKLIN	AARON OIL COMPANY, INC.	03/02/00	RP0002	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	4697	G	39173	19.5865
58603	53132		FRANKLIN	AARON OIL COMPANY, INC.	04/03/00	RP00062	RECOVERABLE	ABSORBENT MAT. W/ GASOLINE	1	DM	1	D	458.7	0.22935
58603	53302		FRANKLIN	AARON OIL COMPANY, INC.	06/19/00	RP00062	RECOVERABLE	ABSORBENT MAT. W/ GASOLINE	1	DM	55	G	458.7	0.22935
58603	53528		FRANKLIN	AARON OIL COMPANY, INC.	08/01/00	RP0002	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	3000	G	25020	12.51
58603	53606		FRANKLIN	AARON OIL COMPANY, INC.	09/18/00	RP00062	RECOVERABLE	ABSORBENT MAT. W/ GASOLINE	1	DM	250	P	250	0.125
58603	53685		FRANKLIN	AARON OIL COMPANY, INC.	07/14/00	RP0002	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	4144	G	34561	17.2805
58603	54016		FRANKLIN	BRIDGEPORT TERMINAL	02/16/01	RP0002	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	5370	G	44785.8	22.3929
58603	56604	23204	FRANKLIN	AARON OIL COMPANY, INC.	05/07/03	RP00062	RECOVERABLE	ABSORBENT MAT. W/ GASOLINE	3	DM	1000	P	1000	0.5
58603	56606	23215	FRANKLIN	AARON OIL COMPANY, INC.	05/07/03	RP00062	RECOVERABLE	ABSORBENT MAT. W/GASOLINE	4	DM	1600	P	1600	0.8
58603	56829	24162	FRANKLIN	AARON OIL COMPANY, INC.	05/07/03	RP00062	RECOVERABLE	ABSORBENT MAT. W/ GASOLINE	3	DM	750	P	750	0.375

FACILITY ID	MANIFEST NO	RIPR NO	TRANS	DISPOSER	TSDF Date	SHIP Num	RESIDUAL TYPE	STREAM DESC	#	CONT.	AMT	UNITS	LBS	TONS
58603	57162	26067	FRANKLIN	AARON OIL COMPANY, INC.	07/17/03	RP00062	RECOVERABLE	ABSORBENT MAT. W/ GASOLINE	1	DM	150	P	150	0.075
58603	57197	26205	EQ-NE	U.S. FILTER RECOVERY SERVICES	07/02/03	RP0044	RECOVERABLE	SLUDGE, TANK BOTTOM	1	TT	5179	G	43192.9	21.59645
58603	57425	26995	EQ-NE	AARON OIL COMPANY, INC.	08/28/03	RP0051	RECOVERABLE	FILTERS, GASOLINE	2	DM	400	P	400	0.2
58603	57673	28188	EQ-NE	AARON OIL COMPANY, INC.	10/15/03	RP00062	RECOVERABLE	ABSORBENT MAT. W/ GASOLINE	3	DM	600	P	600	0.3
58603	57870	29060	EQ-NE	AARON OIL COMPANY, INC.	10/15/03	RP0130	RECOVERABLE	SLUDGE, OIL/WATER SEPARATOR	1	DM	50	G	417	0.2085
58603	57871	29064	EQ-NE	AARON OIL COMPANY, INC.	10/15/03	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	2	DM	400	P	400	0.2
58603	59037	34459	EQ-NE	U.S. FILTER RECOVERY SERVICES	05/04/04	RP0078	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	3815	G	31817.1	15.90855
58603	59203	35222	EQ-NE	AARON OIL COMPANY, INC.	07/29/04	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	7	DM	1050	P	1050	0.525
58603	60184	39824	EQ-NE	U.S. FILTER RECOVERY SERVICES	11/10/04	RP0078	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	4370	G	36445.8	18.2229
58603	60208	41504	EQ-NE	U.S. FILTER RECOVERY SERVICES	01/14/05	RP0078	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	1335	G	11133.9	5.56695
58603	60239	39927	EQ-NE	AARON OIL COMPANY, INC.	01/12/05	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	3	DM	600	P	600	0.3
58603	60781	42789	EQ-NE	AARON OIL COMPANY, INC.	03/31/05	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	4	DM	800	P	800	0.4
58603	61062	43871	EQ-NE	U.S. FILTER RECOVERY SERVICES	04/12/05	RP0078	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	3720	G	31024.8	15.5124
58603	61826	47745	EQ-NE	AARON OIL COMPANY, INC.	09/29/05	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	4	DM	800	P	800	0.4
58603	63367	54363	EQ-NORTHEA	AARON OIL COMPANY, INC.	07/13/06	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	4	DM	800	P	800	0.4
58603	78390	78390	EQ-NORTHEA	CASIE ECOLOGY OIL SALVAGE, INC	06/25/09	RP0130	RECOVERABLE	SLUDGE, OIL/WATER SEPARATOR	2	DM	110	G	917.4	0.4587
58603	79955	79955	EQ-NORTHEA	CASIE ECOLOGY OIL SALVAGE, INC	09/23/09	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	4	DM	1200	P	1200	0.6
58603	80022	90333	EQ-NORTHEA	AARON OIL COMPANY, INC.	10/19/11	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	7	DM	700	P	700	0.35
58603	84761	84761	EQ-NORTHEA	LORCO PETROLEUM	07/23/10	RP0118	RECOVERABLE	WATER/DIESEL/ GASOLINE	1	TT	5250	G	43786.5	21.89325
58603	85065	85065	EQ-NORTHEA	LORCO PETROLEUM	07/30/10	RP0118	RECOVERABLE	WATER/DIESEL/ GASOLINE	1	TT	3000	G	25020.8	12.5104

FACILITY ID	MANIFEST NO	RIPR NO	TRANS	DISPOSER	TSDf Date	SHIP Num	RESIDUAL TYPE	STREAM DESC	#	CONT.	AMT	UNITS	LBS	TONS
58603	93886	66820	EQ-NORTHEA	SIEMENS WATER TECHNOLOGIES COR	02/05/08	RP0118	RECOVERABLE	WATER/DIESEL/ GASOLINE	1	TT	5000	G	41700	20.85
58603	C021935	62036	LORCO	CASIE ECOLOGY OIL SALVAGE, INC	07/05/07	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	3	DM	750	P	750	0.375
58603	GAS1		DSI	SHELL-IL	01/28/98	RP0002	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	4310	G	35945.4	17.9727
58603	GAS2		DSI	SHELL-IL	03/31/98	RP0002	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	5022	G	41883.5	20.94175
58603	GAS3		DSI	SHELL-IL	04/21/98	RP0002	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	5232	G	43634.9	21.81745
58603	GAS4		DSI	SHELL-IL	05/26/98	RP0002	RECOVERABLE	TANK BOTTOM WATER - GASOLINE	1	TT	4665	G	38906.1	19.45305
58603	NHZ36374	59296	LORCO	CASIE ECOLOGY OIL SALVAGE, INC	03/20/07	RP0125	RECOVERABLE	ABSORBENTS W/ PETROLEUM PROD	3	DM	500	P	500	0.25
58603	491		FRANKLIN	AARON OIL COMPANY, INC.	12/20/01	RP0017	RECYCLED	FILTERS USED OIL METAL	1	DM	300	P	300	0.15
58603	16695	56308	LORCO	LORCO PETROLEUM	11/23/06	RC0014	RECYCLED-NON	USED OIL FILTERS	1	DM	50	P	50	0.025
58603	21491	64567	LORCO	LORCO PETROLEUM	10/16/07	RC0014	RECYCLED-NON	USED OIL FILTERS	1	DM	350	P	350	0.175
58603	250	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	28.24	T	56480	28.24
58603	258	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	31.18	T	62360	31.18
58603	259	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	29.99	T	59980	29.99
58603	261	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	27.97	T	55940	27.97
58603	262	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	24.92	T	49840	24.92
58603	263	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	33.06	T	66120	33.06
58603	301	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	29.58	T	59160	29.58
58603	383	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DM	33.25	T	66500	33.25
58603	392	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/21/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	26.73	T	53460	26.73
58603	438	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/21/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	28.35	T	56700	28.35

FACILITY ID	MANIFEST NO	RIPR NO	TRANS	DISPOSER	TSDF Date	SHIP Num	RESIDUAL TYPE	STREAM DESC	#	CONT.	AMT	UNITS	LBS	TONS
58603	440	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/21/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	26.12	T	52240	26.12
58603	443	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/21/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	23.03	T	46060	23.03
58603	484	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	30.07	T	60140	30.07
58603	487	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	27.84	T	55680	27.84
58603	6	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	25.03	T	50060	25.03
58603	61827	47746	EQ-NE	AARON OIL COMPANY, INC.	09/29/05	RC0014	RECYCLED-NON	USED OIL FILTERS	1	DM	300	P	300	0.15
58603	63368	54364	EQ-NORTHEA	AARON OIL COMPANY, INC.	07/13/06	RC0014	RECYCLED-NON	USED OIL FILTERS	1	DM	200	P	200	0.1
58603	C018532	59295	LORCO	LORCO PETROLEUM	03/16/07	RC0014	RECYCLED-NON	USED OIL FILTERS	1	DM	100	P	100	0.05
58603	L4-7165	83319	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	04/23/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	28.67	T	57340	28.67
58603	L4-7165 1	84009	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	06/10/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	27.87	T	55740	27.87
58603	L4-7165-2	83319	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	04/23/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	29.66	T	59320	29.66
58603	L4-7165-3	83319	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	04/23/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	29.06	T	58120	29.06
58603	L4-7165-4	83319	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	04/23/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	29.54	T	59080	29.54
58603	L4-7165-5	83319	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	04/23/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	28.4	T	56800	28.4
58603	L4-7165-6	83319	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	04/23/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	30.88	T	61760	30.88
58603	L4-7165-7	83319	EQ-NORTHEA	SOIL SAFE, INC - BRIDGEPORT	04/23/10	RC0022	RECYCLED-NON	SOIL WITH GASOLINE	1	DT	29.58	T	59160	29.58
58603	NHZ56111	67279	LORCO	LORCO PETROLEUM	02/25/08	RC0014	RECYCLED-NON	USED OIL FILTERS	1	DM	200	P	200	0.1
													2,333,256 lbs.	1,167 tons

DOCUMENT INFO

27

28

DocID: 00000029

Filename: 58603-1977-02-11-FIG-01 (General
Layout - Brooklyn Plant - Shell).pdf

DOCUMENT INFO

27

DocID: 00000240

Filename: 58603-2000-11-01-OTH-01 (Oil Water
Separator Results - Camin).pdf

Nov-01-00 01:19P Camin Cargo Control Corp. 1 908 862 2545

P.03



Cargo Surveys
Loss Control
Consultation
Analytical Testing
Members Of API-ASTM
Approved by US Customs and
New York Mercantile Exchange

Camin Cargo Control, Inc.

BRANCHES:

South Jersey/Philadelphia Tel: (800) 846-0133
Boston New England Tel: (617) 884 4700
Pasadena, Texas Tel: (714) 910-4688
Corpus Christi, Texas Tel: (361) 864-3922
Port Arthur, Texas Tel: (409) 728-3399
Quito-Ecuador Tel: (992) 502-405
Dominican Republic Tel: (809) 552-8992
Guatemala/Mexico Tel: (52-921) 60210
Panama Tel: (507) 227-9503

HEADQUARTERS:

New York - North Jersey
230 Marion Avenue
Linden, New Jersey 07036
Tel: (908) 523-0616
Fax: (908) 862-2545
e-mail: cadm@camincargo.com

CERTIFICATE OF QUALITY

Reported To : Steve Majid
Customer : Motiva Enterprise Brooklyn
25 Paidge Ave.
Brooklyn
NY 11222

Location : Oil/ water separator

File No. : 2000100036
Report Date : 11/01/2000

Matrix : Wastewater
Date Sampled : 10/19/2000
Time Collected : 08:30:00
Date Received : 10/19/2000

Lab No.	Sample ID	Laboratory Test	Method	Results	Units	MDL
29334026		Oil & Grease	1664 A	2.1	mg/L	1.00
29334027		MTBE	EPA 602	2692	ug/L	1.00
		pH	150.1	7.45	s u	0.01

Camin Cargo Control, Inc.

NJLAB ID# 20470
NYLAB ID# 10516

Page 1

11-01-00 13:58 TO:EQUIVA SVS

FROM:7183837970

P02

Shell/Motiva 0008528

MOTIVA ENTERPRISES LLC
SHELL & TEXACO WORKING TOGETHER
25 PAIDGE AVENUE
BROOKLYN, NY 11222
1-718-383-4066 ext. 10
FAX 1-718-383-7970

F A X T R A N S M I T T A L S H E E T

NAME:

Dave

FIRM/DEPARTMENT:

FAX NUMBER:

FROM:

11-1-00Steven M.

TOTAL NUMBER OF PAGES INCLUDING TRANSMITTAL SHEET

2

DATE:

COMMENTS:

See Attached BrooklynOctober results

DOCUMENT INFO

27
30
32

DocID: 00000326

Filename: 58603-2009-11-17-PER-01 (SPDES Permit
0006131 Expires 1-31-15).pdf

New York State Department of Environmental Conservation

Division of Environmental Permits

Programs and Systems, 4th Floor

625 Broadway, Albany, NY 12233-1750

Phone: (518) 402-9167 • Fax: (518) 402-9168

Website: www.dec.ny.gov



Alexander B. Grannis
Commissioner

NOV 17 2009

James W. Lintz
Motiva Enterprises LLC
25 Paidge Avenue
Brooklyn, NY 11222-1281

FACILITY INFORMATION

NAME: Motiva Marketing Terminal
LOCATION: New York (C)
COUNTY: Kings
SPDES NO: NY 000 6131
DEC ID NO.: 2-6101-00105/00019

Dear SPDES Permittee:

Enclosed please find a validated NOTICE/RENEWAL APPLICATION/PERMIT form renewing your State Pollutant Discharge Elimination System (SPDES) permit for the referenced facility. This validated form, together with the previously issued permit (see issuance date of this permit in Part 3 of the NOTICE/RENEWAL APPLICATION/PERMIT form), and any subsequent permit modifications constitute authorization to discharge wastewater in accordance with all terms, conditions and limitations specified therein.

The instructions and other information that you received with the NOTICE/RENEWAL APPLICATION/PERMIT package fully described procedures for renewal and modification of your SPDES permit under the Environmental Benefit Permit Strategy (EBPS). As a reminder, SPDES permits are renewed at a central location in Albany in order to make the process more efficient. All other concerns with your permit such as applications for permit modifications, permit transfers to a new owner, name changes, and other questions should be directed to the Regional Permit Administrator at the following address:

John Cryan
NYS DEC Region 2
47-40 21st Street
1 Hunters Point Plaza
Long Island City, NY 11101-5407
(718) 482-4997

If you have already filed an application for modification of your permit, it will be processed separately through our regional office. If you have questions concerning this permit renewal, please contact Lindy Sue Czubernat at (518) 402-9165.

Sincerely,

Chief Permit Administrator

Enclosure

cc: RPA
RWE
BWP

Shell/Motiva 0008531

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
State Pollutant Discharge Elimination System (SPDES)
NOTICE / RENEWAL APPLICATION / PERMIT



Please read **ALL** instructions on the back before completing this application form. Please **TYPE** or **PRINT** clearly in ink.

PART 1 - NOTICE

04/15/2009

Permittee Contact Name, Title, Address

Facility and SPDES Permit Information

MOTIVA ENTERPRISES LLC
~~MARIO D'ANTONIO~~ JAMES W. LINTZ X
 25 PAIDGE AVE
 BROOKLYN NY ~~11222~~-1281
 11222

Name: MOTIVA MARKETING TERMINAL
 Ind. Code: 5171 County: KINGS
 DEC No.: 2-6101-00105/00019
 SPDES No.: NY 000 6131
 Expiration Date: 02/01/2010
 Application Due By: 08/05/2009

Are these name(s) & address(es) correct? if not, please write corrections above.

The State Pollutant Discharge Elimination System Permit for the facility referenced above expires on the date indicated. You are required by law to file a complete renewal application at least **180 days** prior to expiration of your current permit. Note the "Application Due By" date above.

CAUTION: This short application form and attached questionnaire are the only forms acceptable for permit renewal. Sign Part 2 below and mail only this form and the completed questionnaire using the enclosed envelope. Effective April 1, 1994 the Department no longer assesses SPDES application fees.

If there are changes to your discharge, or to operations affecting the discharge, then in addition to this renewal application, you must also submit a separate permit modification application to the Regional Permit Administrator for the DEC region in which the facility is located, as required by your current permit. See the reverse side of this page for instructions on filing a modification request.

PART 2 - RENEWAL APPLICATION

CERTIFICATION: I hereby affirm that under penalty of perjury that the information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to section 210.45 of the Penal Law.

JAMES W. LINTZ
 Name of person signing application (see instructions on back)

TERMINAL COMPLEX MANAGER

Signature

Title

Date

7/20/09

PART 3 - PERMIT (Below this line - Official Use Only)

Effective Date: 2/1/10

Expiration Date: 1/31/15

William R. Adriance

Permit Administrator

Address:

NYSDEC - Division of Environmental Permits
 Bureau of Environmental Analysis
 625 Broadway, Albany, NY 12233-1750

Signature

Date

NOV 17 2009

This permit together with the previous valid permit for this facility issued 2/1/05 and subsequent modifications constitute authorization to discharge wastewater in accordance with all terms, conditions and limitations specified in the previously issued valid permit, modifications thereof or issued as part of this permit, including any special or general conditions attached hereto. Nothing in this permit shall be deemed to waive the Department's authority to initiate a modification of this permit on the grounds specified in 6NYCRR §621.14, 6NYCRR §754.4 or 6NYCRR §757.1 existing at the time this permit is issued or which arise thereafter.

Attachments: General Conditions dated / /



Please enter the
numbers from your
current permit:

DEC Number:

2-60101-00105 00012

SPDES Number: NY

000 6131

SPDES RENEWAL APPLICATION QUESTIONNAIRE

THIS PAGE MUST BE COMPLETED AND RETURNED WITH YOUR COMPLETED APPLICATION

Please TYPE or PRINT neatly using adequate pressure to make ALL copies legible. Keep a copy for your records.

1. Has the SPDES permit for your facility been modified in the past 5 years ☐ YES ☒ NO
2. Dischargers who use, manufacture, store, handle or discharge toxic or hazardous pollutants are subject to Industrial Best Management Practices (BMP) plan requirements for toxic or hazardous substances. A BMP plan prevents or minimizes the potential for release of pollutants to receiving waters from such ancillary industrial activities, including material storage areas; plant site runoff; in-plant transfer; process and material storage areas; loading and unloading operations, and sludge and waste disposal areas.

Does your facility conduct ancillary activities as described above, which are not covered by BMP requirements in your current permit? ☐ YES ☒ NO

Please indicate which of the following best describes the situation at your facility:

- ☐ None of the concerns on the "Self Evaluation List" seem to apply to my facility at this time and I will not be applying for a modification of the SPDES permit in the foreseeable future.
- ☐ Yes, some of the items on the "Self Evaluation List" have led me to believe that the permit for this facility needs to be modified. I already have a complete modification application pending with the Department.
- ☐ Yes, some of the items on the "Self Evaluation List" have led me to believe that the SPDES permit for this facility may need to be Modified. I have requested the appropriate forms by phone OR I have completed and attached the "Request For SPDES Application Forms" (included in this renewal package) to allow me to submit a permittee-initiated Modification application. See The "Request For SPDES Application Forms" page for a toll free 800 number.
- ☒ The items on the "Self Evaluation List" have left me unable to conclude whether my permit needs to be modified at this time. I am reporting the following general concerns about my permit:

SEE ATTACHED DESCRIPTION OF PENDING FACILITY
CHANGES

DISTRIBUTION:

Regional Water Engineer
Regional Permit Administrator
Central Office (BWP)

20-2 (1/89)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
State Pollutant Discharge Elimination System (SPDES)
DISCHARGE PERMIT
Special Conditions (Part I)

Industrial Code: 5171
Discharge Class (CL): 01
Toxic Class (TX): T
Major Drainage Basin: 17
Sub Drainage Basin: 02
Water Index Number: LIS-4
Compact Area: ISC

SPDES Number: NY-0006131
DEC Number: 2-6101-00105/00019
Effective Date (EDP): 02/01/00
Expiration Date (ExDP): 02/01/05
Modification Date(s):
Attachment(s): General Conditions (Part II) Date: 11/90

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act as amended, (33 U.S.C. Section 1251 et. seq.) (hereafter referred to as "the Act").

PERMITTEE NAME AND ADDRESSAttention: R.S Bailey, Regional Mgr. NE

Name: Motiva Enterprises LLC
Street: Two Shell Plaza, P.O. Box 2099
City: Houston

State: TX Zip Code: 77252-2099

is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESSName: Motiva Marketing TerminalLocation (C,T,V): New York (C)County: KingsFacility Address: 25 Paidge Ave.City: BrooklynState: NY Zip Code: 11222-1281NYTM - E: 588.5 NYTM - N: 4 510.From Outfall No.: 001 at Latitude: 40° 44' 20" & Longitude: 73° 57' 10"into receiving waters known as: Newtown Creek Class: SD

and; (list other Outfalls, Receiving Waters & Water Classifications)

01A Newtown Creek (Via 001) SD

In accordance with the effluent limitations, monitoring requirements and other conditions set forth in Special Conditions (Part I) and General Conditions (Part II) of this permit.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESSMailing Name: Motiva Enterprises LLCStreet: 25 Paidge AvenueCity: BrooklynState: NY Zip Code: 11222-1281Responsible Official or Agent: Phone: (718) 383-4066

This permit and the authorization to discharge shall expire on midnight of the expiration date shown and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for a permit renewal no less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

T. Burns, Div. Of Water

Hon. R. Giuliani, Mayor of NYC
NYC DOH & DEPInterstate Sanitation Commission
U.S. EPA, Reg. II & Edison, NJ
NYS DEC Div. of Water, BWCP & BWP

Deputy

Permit Administrator:	<u>John F. Cryan</u>
Address:	<u>47-40 21st St., 2nd Floor</u> <u>Long Island City, NY 11101 (718) 482-4997</u>
Signature:	<u>John F. Cryan</u> Date: <u>12/17/99</u>

Shell/Motiva 0008534

SPDES No.: NY 000 6131

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FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning EDPand lasting until EDP + 5 yrs.

the discharges from the permitted facility shall be limited and monitored by the permittee as specified below:

Outfall Number & Effluent Parameter	Discharge Limitations		Units	Measurement Frequency	Minimum Monitoring Requirements
	Daily Avg.	Daily Max.			Sample Type
<u>001 - Storm Water Runoff</u>					
Flow	NA	Monitor	GPD	Monthly	Instantaneous
Oil & Grease	NA	15	mg/l	Monthly	Grab
pH (range)	(6.0 - 9.0)		SU's	Monthly	Grab
MTBE	NA	Monitor	mg/l	Monthly	Grab

01A - Hydrostatic Test Water¹

Flow	NA	Monitor	GPD	Each Discharge ²	Instantaneous
Oil & Grease	NA	15	mg/l	Each Discharge ²	Grab(s)
pH (range)	(6.0 - 9.0)		SU's	Each Discharge ²	Grab(s)
Benzene	NA	0.020	mg/l	Each Discharge ²	Grab(s)
Toluene	NA	0.020	mg/l	Each Discharge ²	Grab(s)
Xylenes (Total)	NA	0.020	mg/l	Each Discharge ²	Grab(s)
Ethylbenzene	NA	0.020	mg/l	Each Discharge ²	Grab(s)
Chlorine, Total Residual ³	NA	0.10	mg/l	Each Discharge ²	Grab(s)
MTBE	NA	Monitor	mg/l	Each Discharge ²	Grab(s)

1. Tanks being hydrostatically tested must be free of product and cleaned. The Regional Water Engineer must be informed at least two business days prior to the discharge of tank test water.

2. Any discharge of tank test water must be done under the direct supervision of plant personnel. Samples from the tank must be taken prior to discharge from various levels within the tank (Top, middle and bottom). If sampling shows conformance with effluent limitations, discharge may be initiated. If effluent limitations are not attained, additional measures must be implemented to attain compliance prior to initiation of discharge.

A visual check of the discharge must be made for the presence of oil and floating substances. Data associated with tank test water shall be kept, along with the log of visual observations, for a period of three years and be made available to department personnel upon request.

The discharge of tank test water must be done in a manner that minimizes erosion of soil or sediment and does not cause flooding in the area of discharge. It must be done in a manner that minimizes the impact on the fisheries.

3. Only required when chlorinated water is used in tank testing.

91-20-2g (1/96)

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ACTION LEVEL REQUIREMENTS (TYPE I)

The parameters listed below have been reported present in the discharge but at levels that currently do not require technology or water quality based limits. Action levels have been established which, if routinely or excessively exceeded, will result in reconsideration and/or development of technology or water quality based limits.

Routine action level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted. If submission of DMR's is not required by this permit, the results shall be maintained in accordance with instructions on the RECORDING, REPORTING AND MONITORING page of this permit.

If any of the action levels is exceeded, the permittee shall undertake a short-term, high-intensity monitoring program for the parameter(s). Samples identical to those required for routine monitoring purposes shall be taken on each of at least three consecutive operating and discharge days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the second month following the month when the action level was first exceeded. Results may be appended to the DMR or transmitted under separate cover to the addresses listed on the RECORDING, REPORTING AND MONITORING page of this permit. If levels higher than the actions levels are confirmed the results shall constitute an application for permit modification and the permit may be reopened for consideration of revised action levels or effluent limits.

The permittee is not authorized to discharge any of listed parameters at levels which may cause or contribute to a violation of water quality standards.

Outfall Number & Effluent Parameter	Action Level	Units	Minimum Monitoring Requirements	
			Measurement Frequency	Sample Type
<u>001 Storm Water Runoff</u>				
Benzene	0.10	mg/l	Quarterly	Grab
Toluene	0.10	mg/l	Quarterly	Grab
Xylenes (Total)	0.10	mg/l	Quarterly	Grab
Ethylbenzene	0.10	mg/l	Quarterly	Grab

01-20-2g

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Prohibitions: Consistent with Department policy dilution is prohibited as a substitute for treatment. Except where expressly authorized to do so by an applicable Categorical Standard or the Commissioner or his duly authorized representative, no Industrial User shall ever increase the use of process water or, in any other way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with a permit effluent limitation requirement.

No discharge of tank water bottoms and/or any industrial or manufacturing process wastewater effluents are permitted. Included in the effluents categorized as industrial process effluents are wastewaters resulting from vehicle maintenance or washing operations. Washing operations are those cleaning operations which involve the use of detergents or other emulsifying chemicals.

Tank water bottoms, vehicle maintenance and washing wastewaters are not likely to be effectively treated by gravity separation alone and therefore are not permitted to be discharged. After review of an Engineering Submission for the treatment of tank bottoms and/or maintenance and/or washing wastewaters these prohibitions may be altered.

Waste or wastewater generated at locations other than at this facility are not permitted to be treated at or discharged from this facility.

NOTES:

This SPDES permit is not to be construed as altering obligations of the permittee under 6NYCRR Part 613, i.e. 613.3(c)(iii). Storm water which collects within the secondary containment system must be controlled by a manually operated pump or siphon, or gravity drain pipe which has two manually controlled dike valves operable from the outside of the dike. All pumps, siphons and valves must be properly maintained and kept in good condition. If gravity drain pipes are used, all dike valves must be locked in a closed position except when the operator is in the process of draining ... water from the diked area. The only exceptions shall be those expressly authorized by the Commissioner or his duly authorized representative.

A visual check for oil or floating substances must be made and logged prior to the initiation of any discharge from an impoundment or a discharge controlled by a normally closed valve. The log of visual observations shall be maintained at the facility for a period of at least three years and must be made available to the Department upon request.

91-20-2a (2/89)

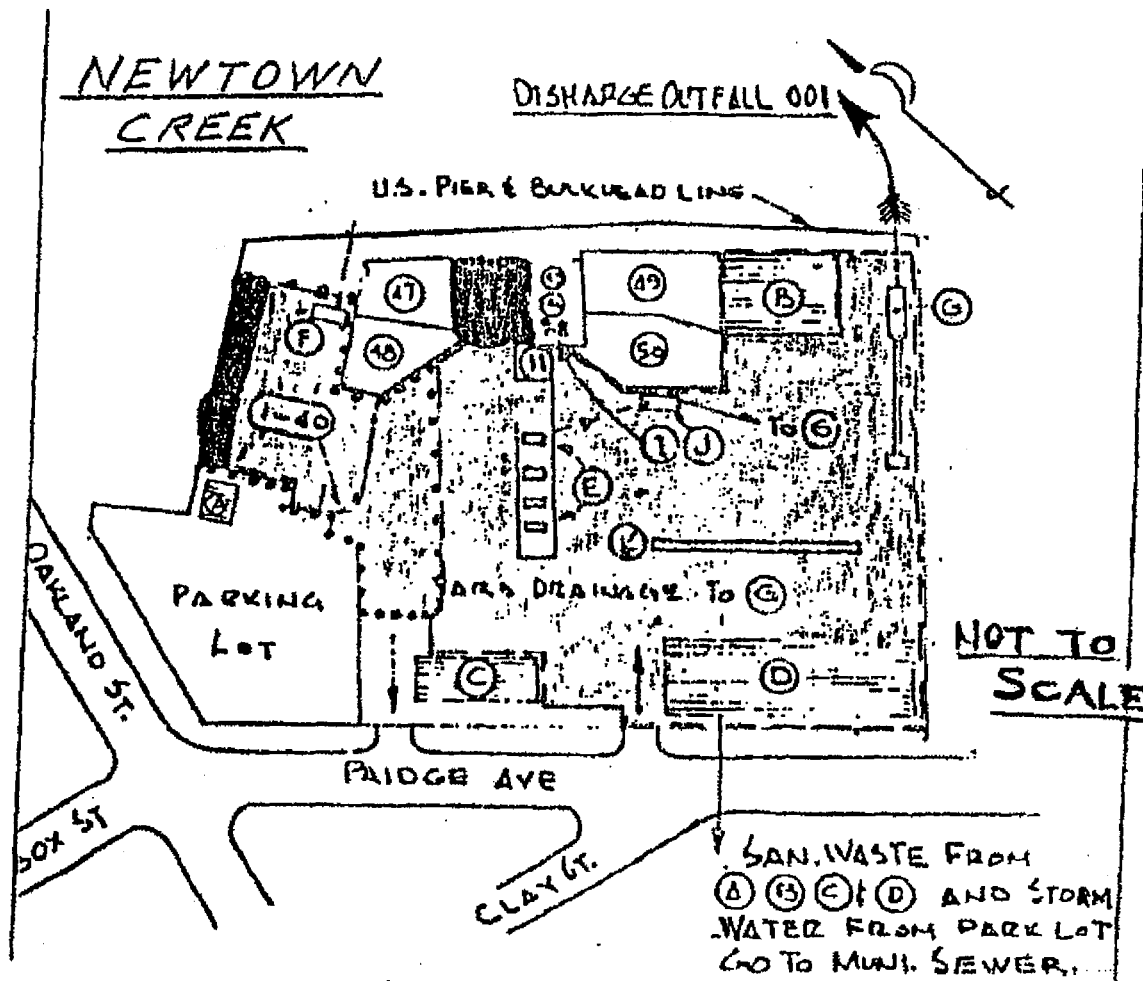
SPDES No.: NY 000 6131Part 1, Page 5 of 9**DEFINITIONS OF DAILY AVERAGE AND DAILY MAXIMUM**

The daily average discharge is the total discharge by weight or in other appropriate units as specified herein, during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges in appropriate units as specified herein divided by the number of days during the calendar month when measurements were made.

The daily maximum discharge means the total discharge by weight or in other appropriate units as specified herein, during any calendar day.

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the location(s) indicated below: (Show sampling locations and outfalls with sketch or flow diagram as appropriate) for 001 from treatment system effluent flow prior to discharge to Newtown Creek. Sampling of hydrostatic test water (01A) shall be from the tank, pipe, etc...contents prior to discharge via 001.



91-20-2k (01/96)

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SPECIAL CONDITIONS - BEST MANAGEMENT PRACTICES

1. The permittee shall develop and implement a Best Management Practices (BMP) plan, to prevent, or minimize the potential for, release of significant amounts of toxic or hazardous pollutants to the waters of the State through plant site runoff; spillage and leaks; sludge or waste disposal; and storm water discharges including, but not limited to, drainage from raw material storage. Completed BMP plans shall be submitted to the Regional Water Engineer within six months of EDP.
2. The permittee shall review all facility components or systems (including material storage areas; in-plant transfer, process and material handling areas; loading and unloading operations; storm water, erosion, and sediment control measures; process emergency control systems; and sludge and waste disposal areas) where toxic or hazardous pollutants are used, manufactured, stored or handled to evaluate the potential for the release of significant amounts of such pollutants to the waters of the State. In performing such an evaluation, the permittee shall consider such factors as the probability of equipment failure or improper operation, cross-contamination of storm water by process materials, settlement of facility air emissions, the effects of natural phenomena such as freezing temperatures and precipitation, fires, and the facility's history of spills and leaks. For hazardous pollutants, the list of reportable quantities as defined in 40 CFR, Part 117 may be used as a guide in determining significant amounts of releases. For toxic pollutants, the relative toxicity of the pollutant shall be considered in determining the significance of potential releases.

The review shall address all substances present at the facility that are listed as toxic pollutants under Section 307(a)(1) of the Clean Water Act or as hazardous pollutants under Section 311 of the Act or that are identified as Chemicals of Concern by the Industrial Chemical Survey.

3. Whenever the potential for a significant release of toxic or hazardous pollutants to State waters is determined to be present, the permittee shall identify Best Management Practices that have been established to minimize such potential releases. Where BMPs are inadequate or absent, appropriate BMPs shall be established. In selecting appropriate BMPs, the permittee shall consider typical industry practices such as spill reporting procedures, risk identification and assessment, employee training, inspections and records, preventive maintenance, good housekeeping, materials compatibility and security. In addition, the permittee may consider structural measures (such as secondary containment and erosion/sediment control devices and practices) where appropriate.
4. Development of the BMP plan shall include sampling of waste stream segments for the purpose of toxic "hot spot" identification. The economic achievability of technology-based end-of-pipe treatment will not be considered until plant site "hot spot" sources have been identified, contained, removed or minimized through the imposition of site specific BMPs or application of internal facility treatment technology.
5. The BMP plan shall be documented in narrative form and shall include any necessary plot plans, drawings or maps. Other documents already prepared for the facility such as a Safety Manual or a Spill Prevention, Control and Countermeasure (SPCC) plan may be used as part of the plan and may be incorporated by reference. USEPA guidance for development of storm water elements of the BMP is available in the September 1992 manual "Storm Water Management for Industrial Activities," USEPA Office of Water Publication EPA 832-R-92-006 (available from NTIS, (703)487-4650, order number PB 92235969). A copy of the BMP plan shall be maintained at the facility and shall be available to authorized Department representatives upon request. As a minimum, the plan shall include the following BMP's:

a. BMP Committee	e. Inspections and Records	i. Security
b. Reporting of BMP Incidents	f. Preventive Maintenance	j. Spill prevention & response
c. Risk Identification & Assessment	g. Good Housekeeping	k. Erosion & sediment control
d. Employee Training	h. Materials Compatibility	l. Management of runoff
6. The BMP plan shall be modified whenever changes at the facility materially increase the potential for significant releases of toxic or hazardous pollutants or where actual releases indicate the plan is inadequate.

* A "hot spot" is a segment of an industrial facility; including but not limited to soil, equipment, material storage areas, sewer lines etc.; which contributes elevated levels of problem pollutants to the wastewater and/or storm water collection system of that facility. For the purposes of this definition, problem pollutants are substances for which end of pipe treatment to meet a water quality or technology requirement may, considering the results of wastestream segment sampling, be deemed unreasonable. For the purposes of this definition, an elevated level is a concentration or mass loading of the pollutant in question which is sufficiently higher than the end of pipe concentration of that same pollutant so as to allow for an economically justifiable removal and/or isolation of the segment and/or B.A.T. treatment of wastewaters emanating from the segment.

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- (e) All requirements of the Discharge Notification Act, including public repository requirements, are waived for any outfall meeting any of the following circumstances, provided Department notification is made in accordance with (f):
- (i) such sign would be inconsistent with any other state or federal statute;
 - (ii) such sign could only be located in an area that is damaged by ice or flooding due to a one-year storm or storms of less severity;
 - (iii) instances in which the outfall to the receiving water is located on private or government property which is restricted to the public through fencing, patrolling, or other control mechanisms. Property which is posted only, without additional control mechanisms, does not qualify for this provision;
 - (iv) instances where the outfall pipe or channel discharges to another outfall pipe or channel, before discharge to a receiving water; or
 - (v) instances in which the discharge from the outfall is located in the receiving water, two-hundred or more feet from the shoreline of the receiving water.
- (f) If the permittee believes that any outfall which discharges wastewater from the permitted facility meets any of the waiver criteria listed in (e) above, notification (form enclosed) must be made to the Department's Bureau of Water Permits, Central Office, of such fact, and, provided there is no objection by the Department, a sign and DMR repository for the involved outfall(s) are not required. This notification must include the facility's name, address, telephone number, contact, permit number, outfall number(s), and reason why such outfall(s) is waived from the requirements of discharge notification. The Department may evaluate the applicability of a waiver at any time, and take appropriate measures to assure that the ECL and associated regulations are complied with.

91-20-2f (5/94)

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RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

- a) The permittee shall also refer to the General Conditions (Part II) of this permit for additional information concerning monitoring and reporting requirements and conditions.
- b) The monitoring information required by this permit shall be summarized, signed and retained for a period of three years from the date of the sampling for subsequent inspection by the Department or its designated agent. Also;
- [X] (if box is checked) monitoring information required by this permit shall be summarized and reported by submitting completed and signed Discharge Monitoring Report (DMR) forms for each 2 month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.


Send the original (top sheet) of each DMR page to:

Department of Environmental Conservation
Division of Water
Bureau of Watershed Compliance Programs
50 Wolf Road
Albany, New York 12233-3506
Phone: (518) 457-3790

Send the first copy (second sheet) of each DMR page to:

Department of Environmental Conservation
Regional Water Engineer
Region 2
1 Hunters Point Plaza
47-40 21st St.
Long Island City, NY 11101-5407

- c) A monthly "Wastewater Facility Operation Report..." (form 92-15-7) shall be submitted (if box is checked) to the [] Regional Water Engineer and/or [] County Health Department or Environmental Control Agency listed above.
- d) Noncompliance with the provisions of this permit shall be reported to the Department as prescribed in the attached General Conditions (Part II).
- e) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.
- f) If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculations and recording on the Discharge Monitoring Reports.
- g) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.
- h) Unless otherwise specified, all information recorded on the Discharge Monitoring Report shall be based upon measurements and sampling carried out during the most recently completed reporting period.
- i) Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section five hundred two of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be sent to the Environmental Laboratory Accreditation Program, New York State Health Department Center for Laboratories and Research, Division of Environmental Sciences, The Nelson A. Rockefeller State Plaza, Albany, New York 12201.



Integrated Contingency Plan

ANNEX 1..... FACILITY AND LOCALITY INFORMATION [DIAGRAMS / MAPS]

This Section contains the drawings and diagrams for the Brooklyn Terminal that are listed below:

Figure 1.1 - Topographic Map

Figure 1.2 - Facility Site Diagram

Figure 1.3 - Evacuation Diagram

Figure 1.4 - Site Drainage Flow Diagram

Figure 1.5 - Environmental Sensitivity Mapping

Figure 1.6 - Dock Diagram

Figure 1.1 Topography Map

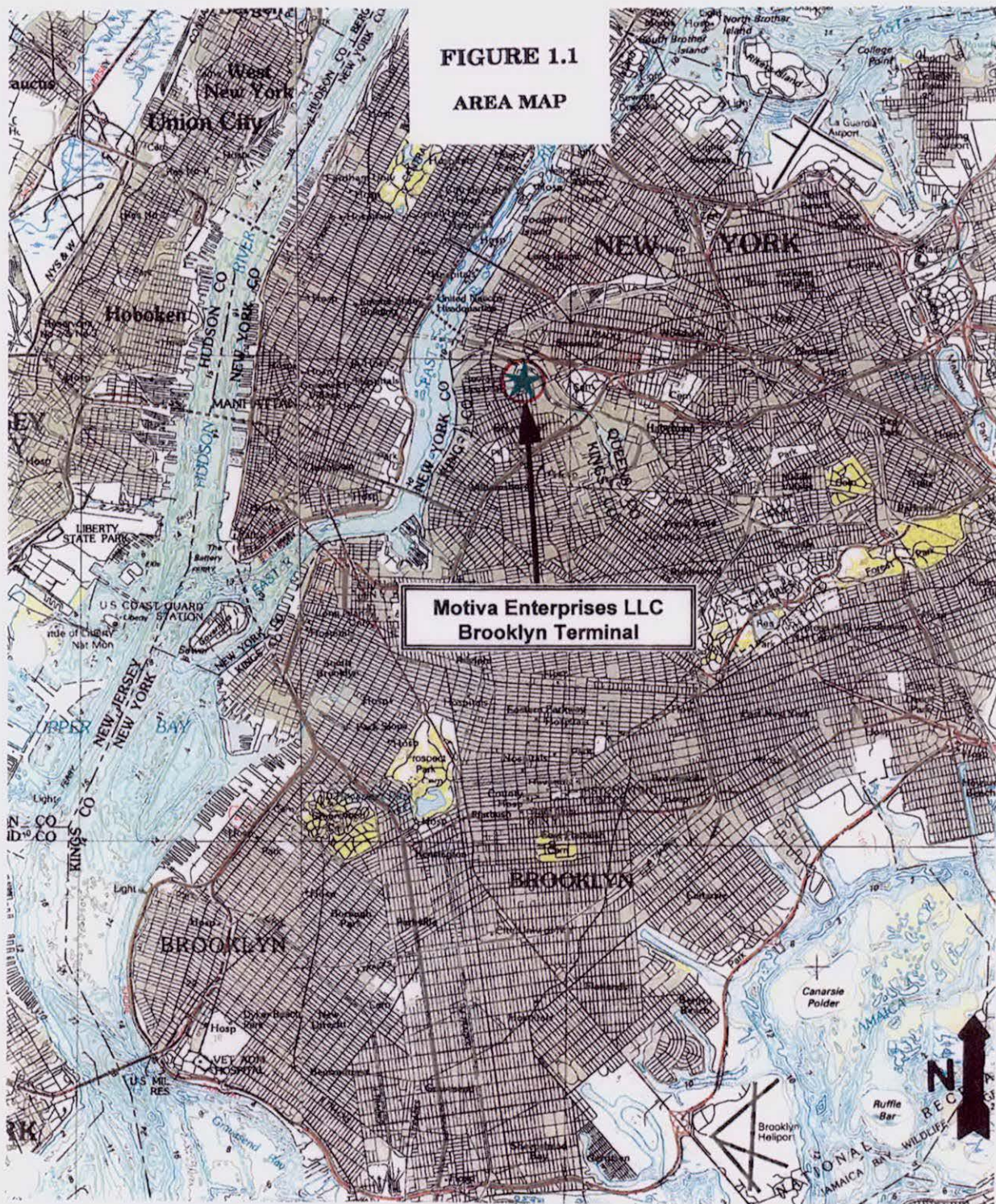
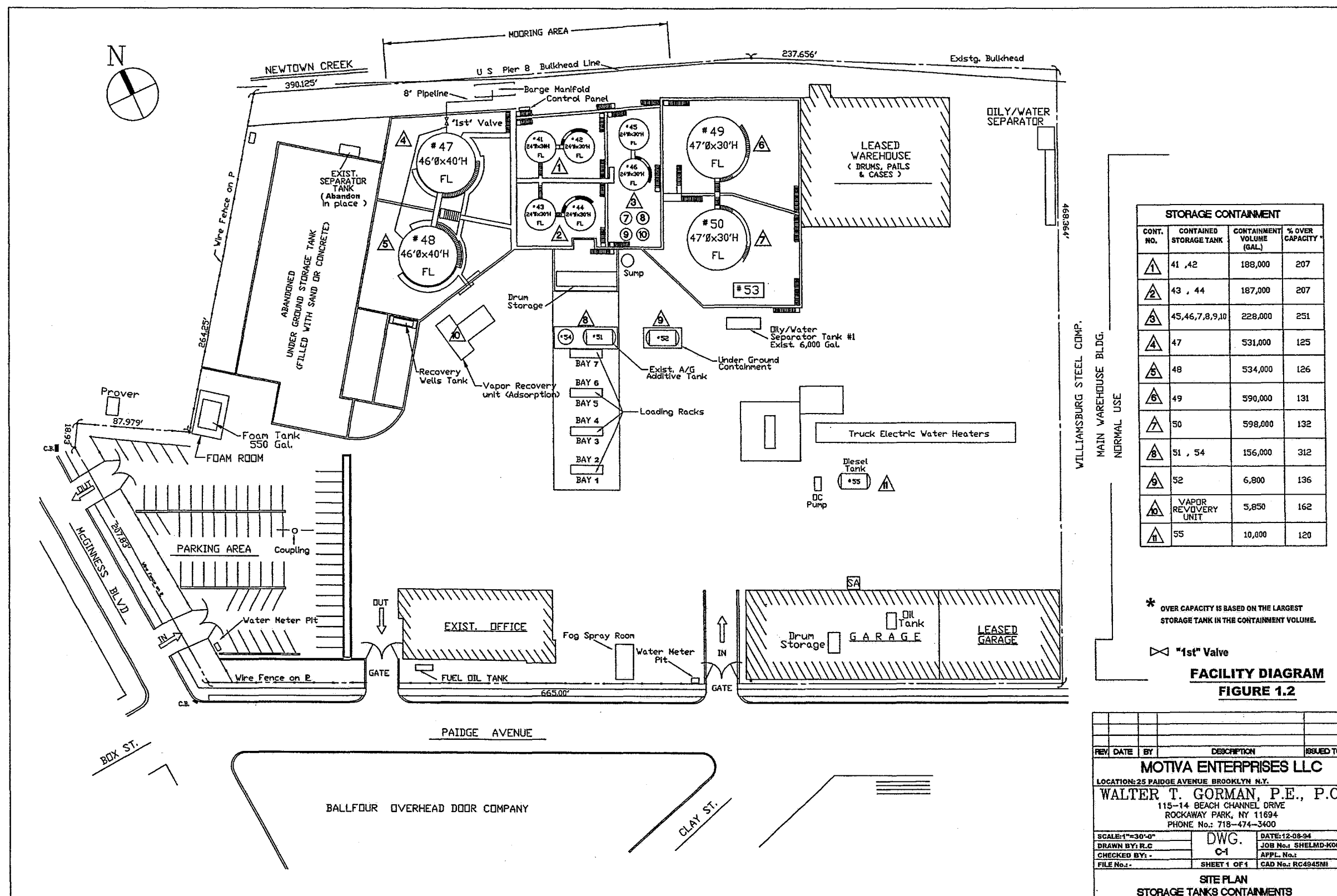


Figure 1.2 Facility Site Diagram

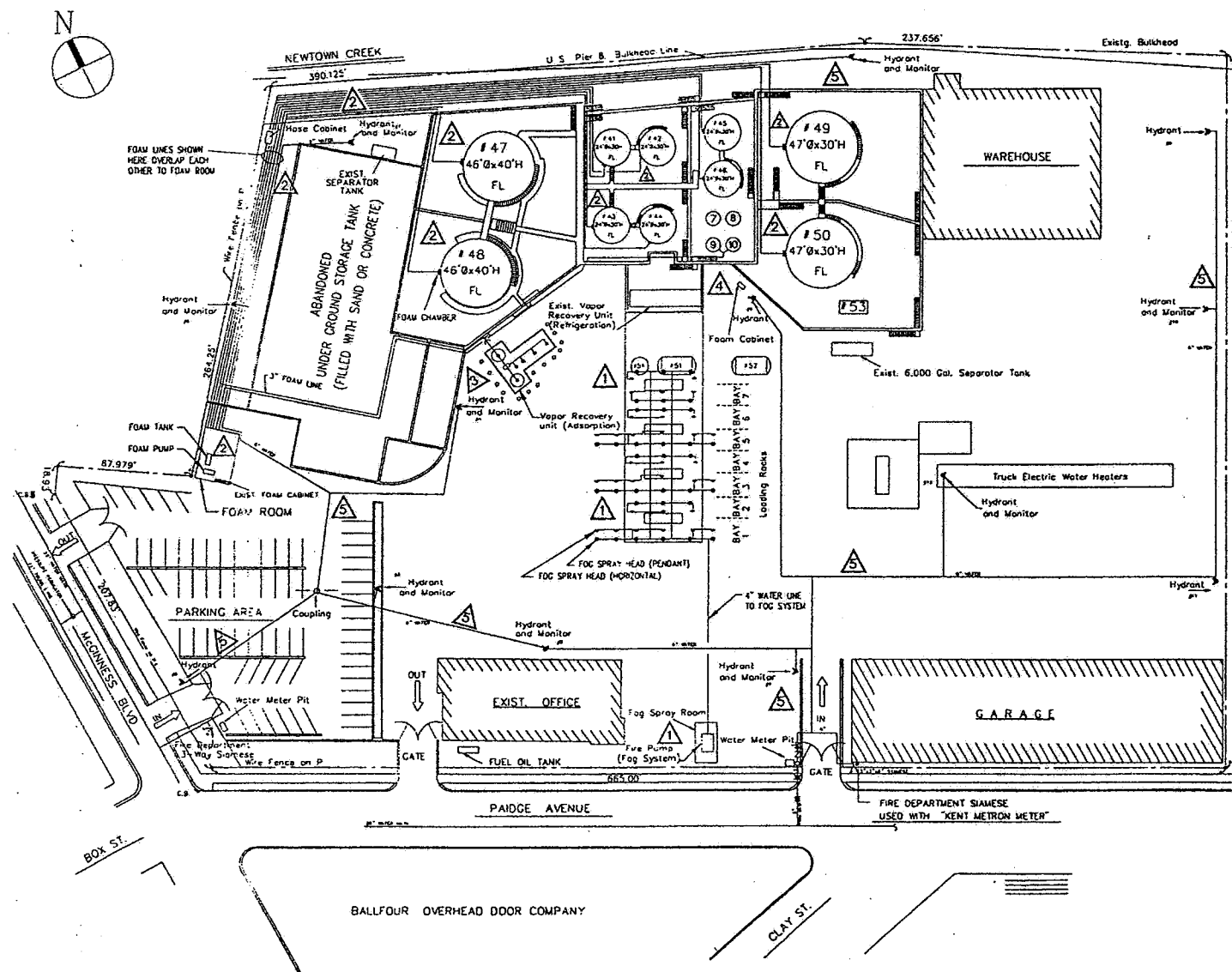


Motiva Enterprises LLC
Brooklyn Terminal

Integrated Contingency Plan
January 2004

File Code: RMAD/M/Brooklyn/Facility Diagram

FIGURE 1.2 (Cont'd)
FACILITY DIAGRAM



- FIRE PROTECTION SYSTEM**
- 1 - FOG SYSTEM (WATER ONLY)
 - PROTECTING LOADING RACKS
 - AUTOMATIC SYSTEM FED BY FIRE PUMP FROM CITY WATER MAIN
 - 2 - FOAM SYSTEM (FOAM AND WATER)
 - PROTECTING STORAGE TANKS
 - MANUAL OPERATION FED BY FIRE PUMP AND FOAM SYSTEM ASSEMBLY
 - 3 - FOAM SYSTEM (FOAM AND WATER)
 - PROTECTING VAPOR RECOVERY SYSTEM
 - MANUAL OPERATION FED BY FIRE PUMP AND FOAM SYSTEM ASSEMBLY
 - 4 - FOAM MONITOR
 - PROTECTING TANKS, RACKS, TERMINAL AREA
 - MANUAL OPERATION FED BY FIRE PUMP AND FOAM SYSTEM ASSEMBLY
 - 5 - HYDRANT AND MONITOR
 - PROTECTING ENTIRE TERMINAL
 - FED DIRECT FROM CITY WATER MAIN

WILLIAMSBURG STEEL COMP.
MAIN WAREHOUSE BLDG.
NORMAL USE

REV.	DATE	BY	DESCRIPTION	ISSUED TO
MOTIVA ENTERPRISES LLC LOCATION: 29 PAYDIDGE AVENUE, BROOKLYN, N.Y. WALTER T. GORMAN, P.E., P.C. 115-14 BEACH CHANNEL DRIVE ROCKAWAY PARK, NY 11684 PHONE No.: 718-474-3400				
SCALE: 1"=30'-0"		DWG.		DATE: 12-06-94
DRAWN BY: S.K.		F-1		JOB NO.: SHELMO-K001
CHECKED BY: -		APPL. No.:		
FILE No.:		SHEET 1 OF 1		CAD No.: MK4933M
SITE PLAN FIRE PROTECTION SYSTEMS				

Figure 1.3 Evacuation Diagram

Figure 1.4 Site Drainage Flow Diagram

SITE DRAINAGE PLAN

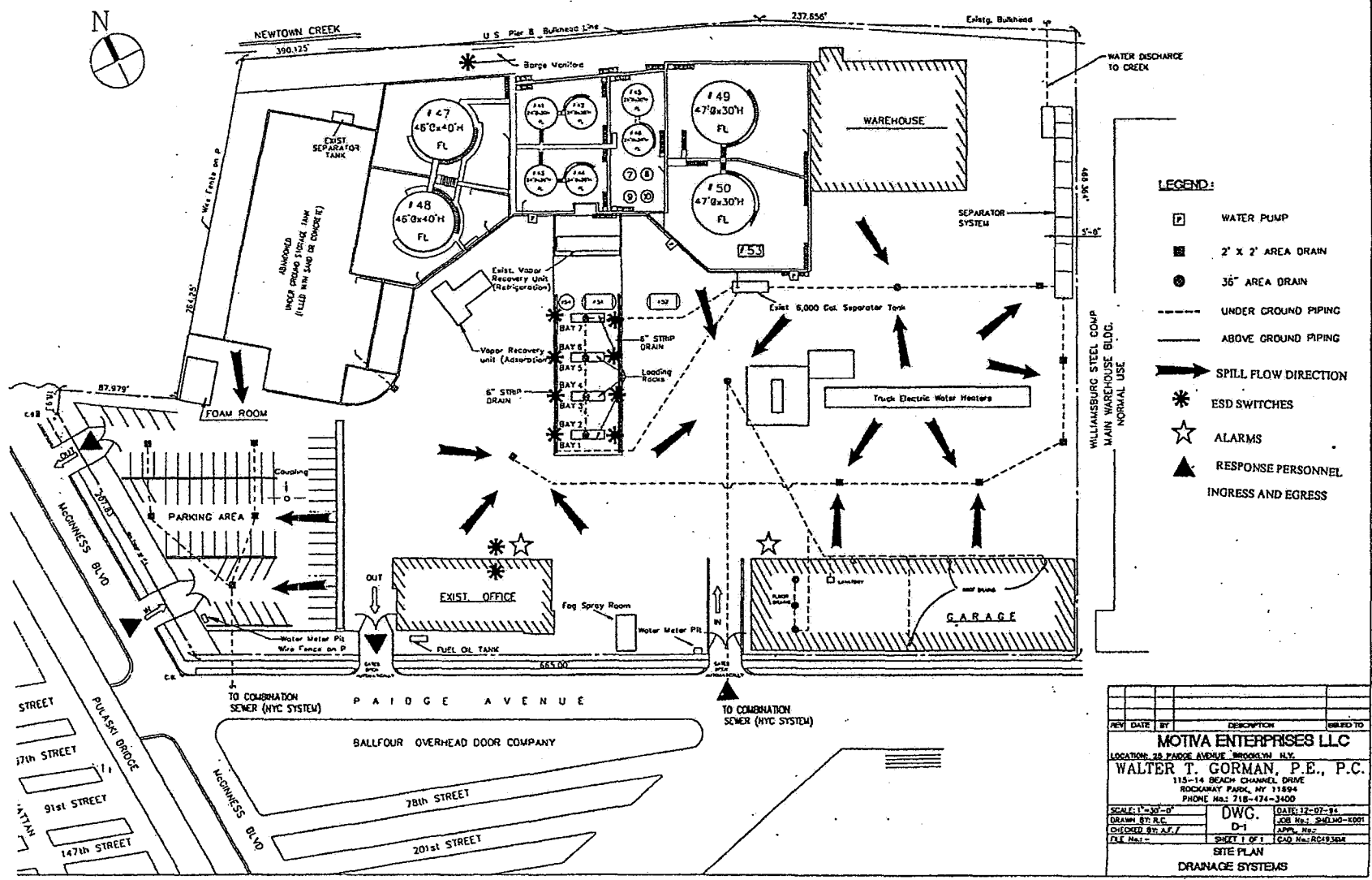
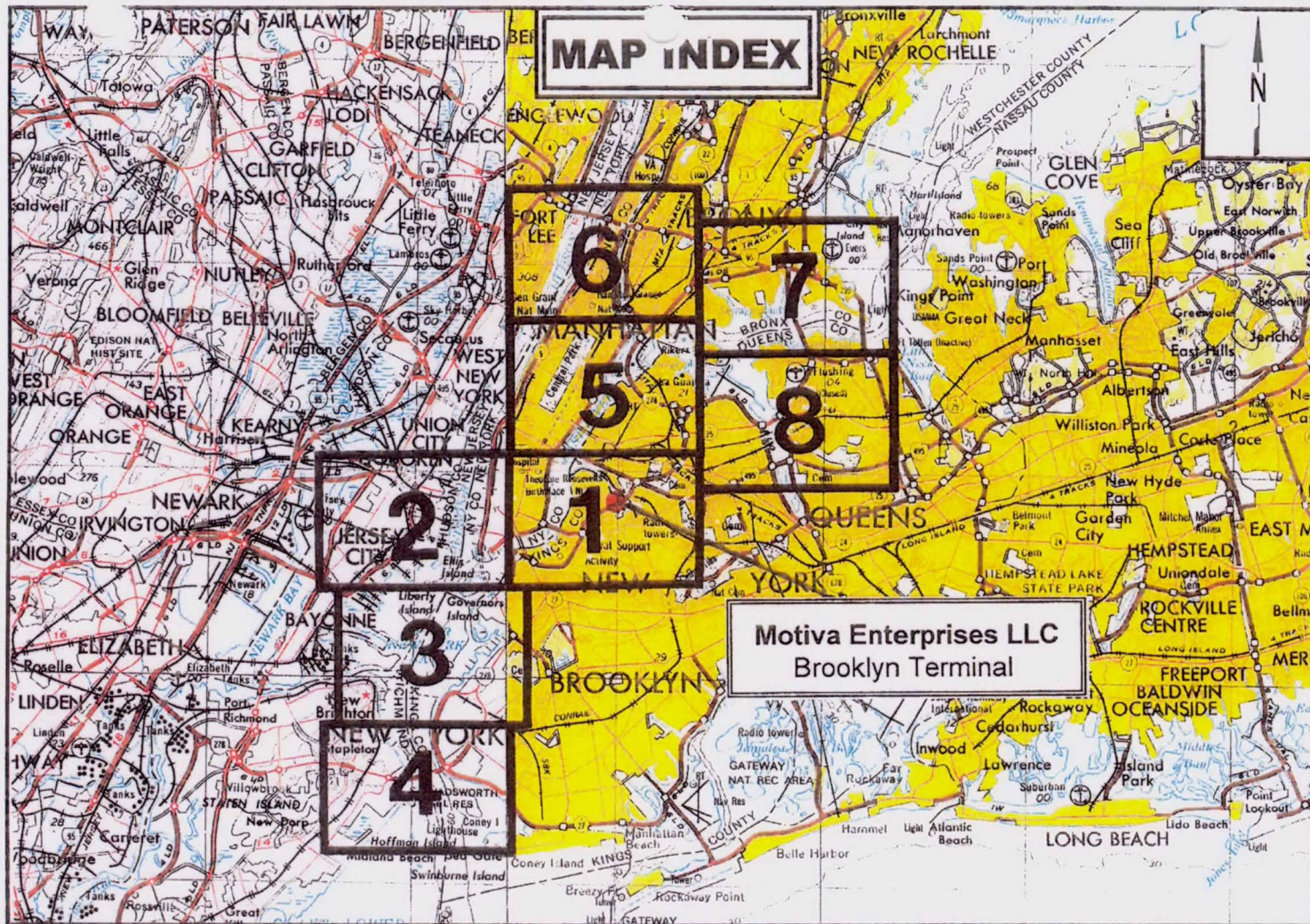
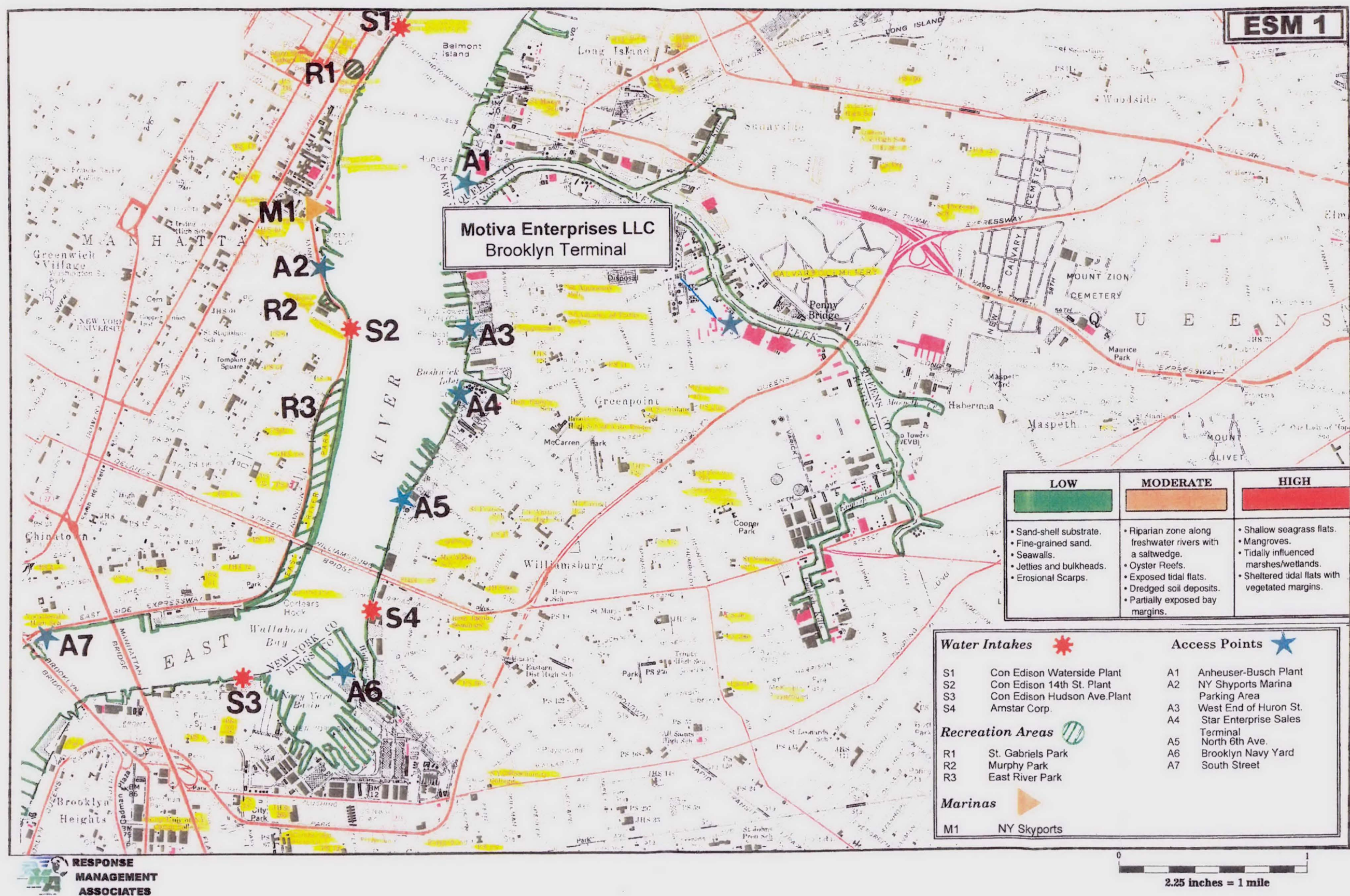
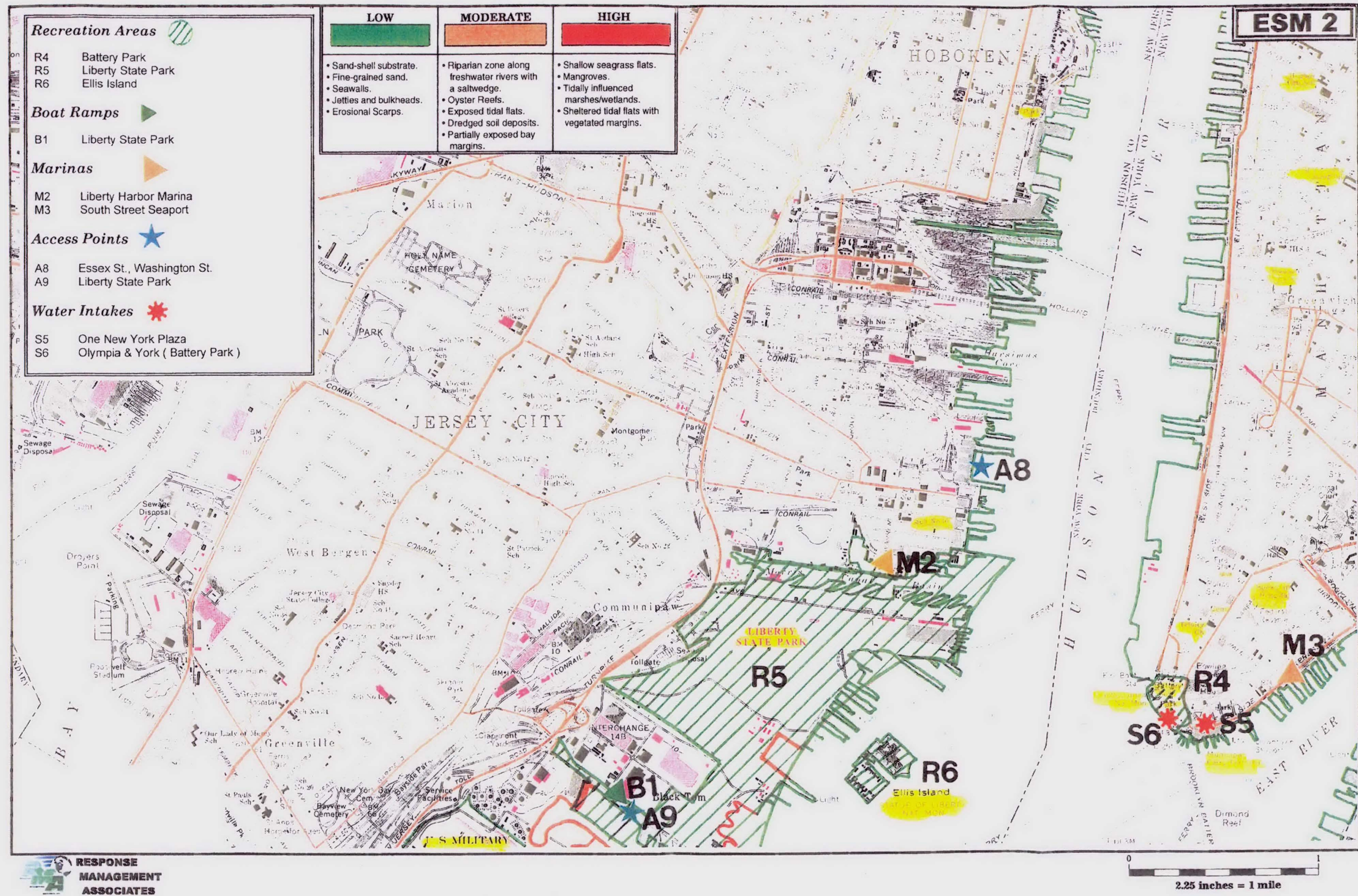
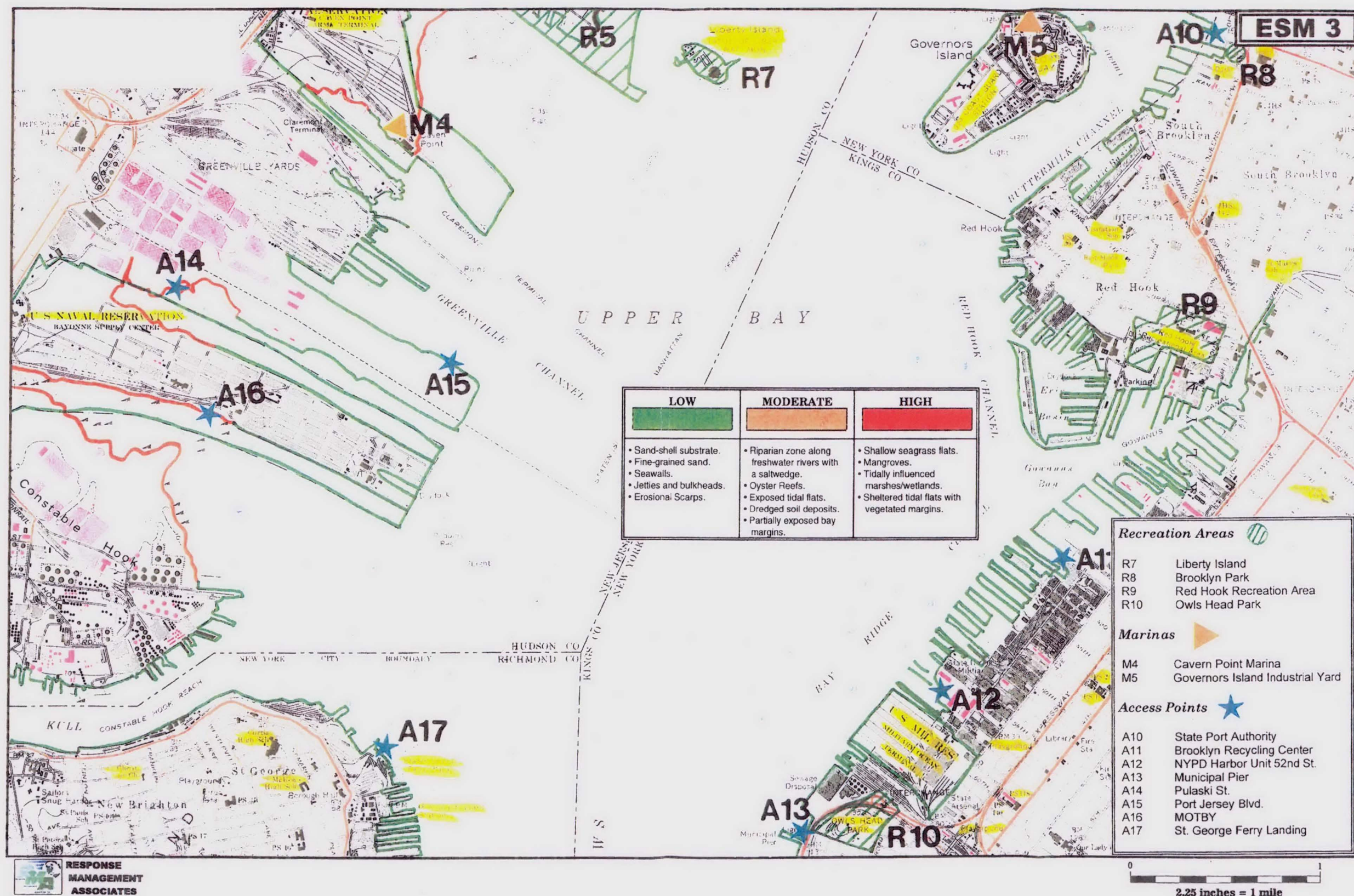


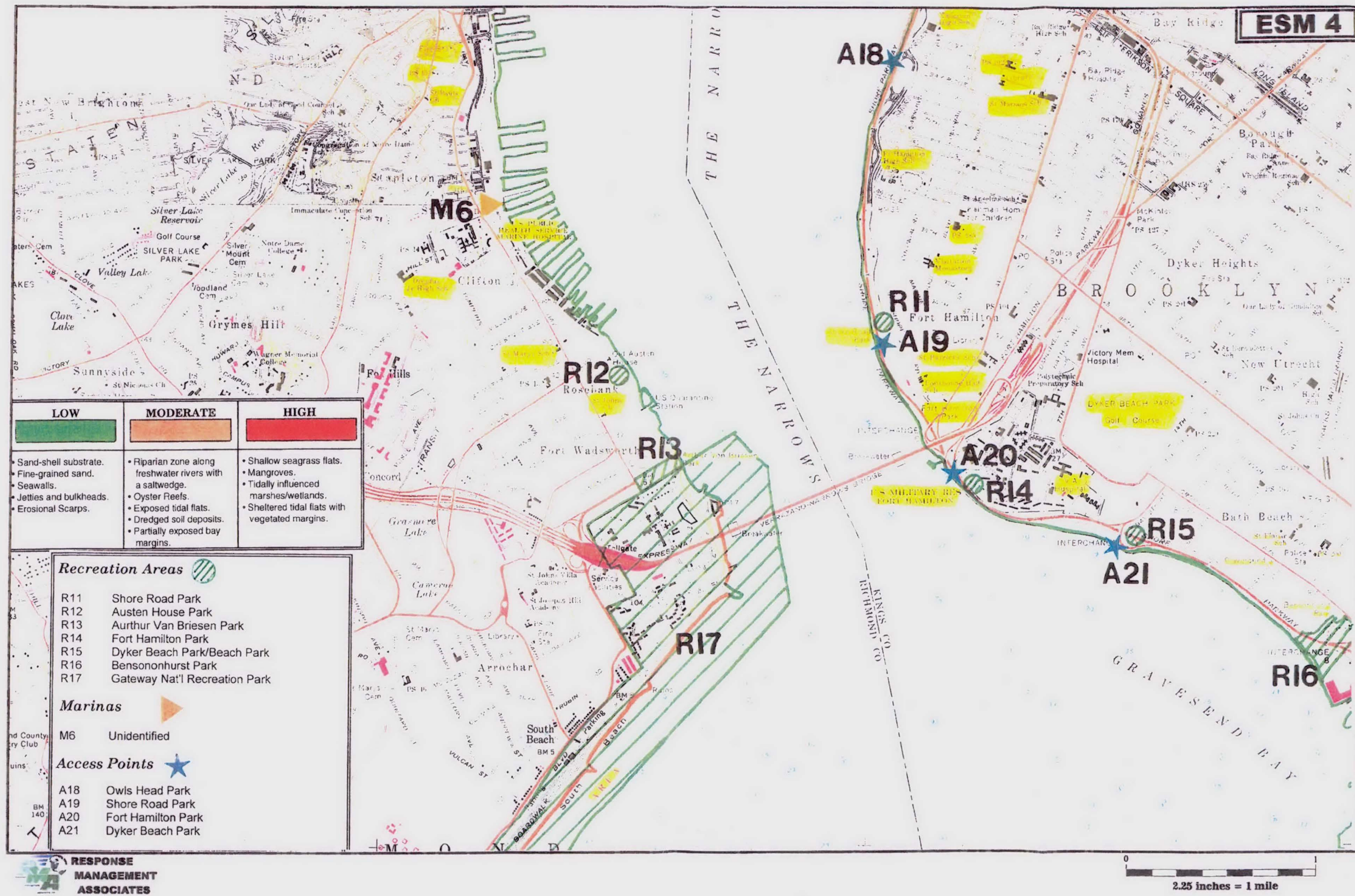
Figure 1.5 Environmental Sensitivity Mapping

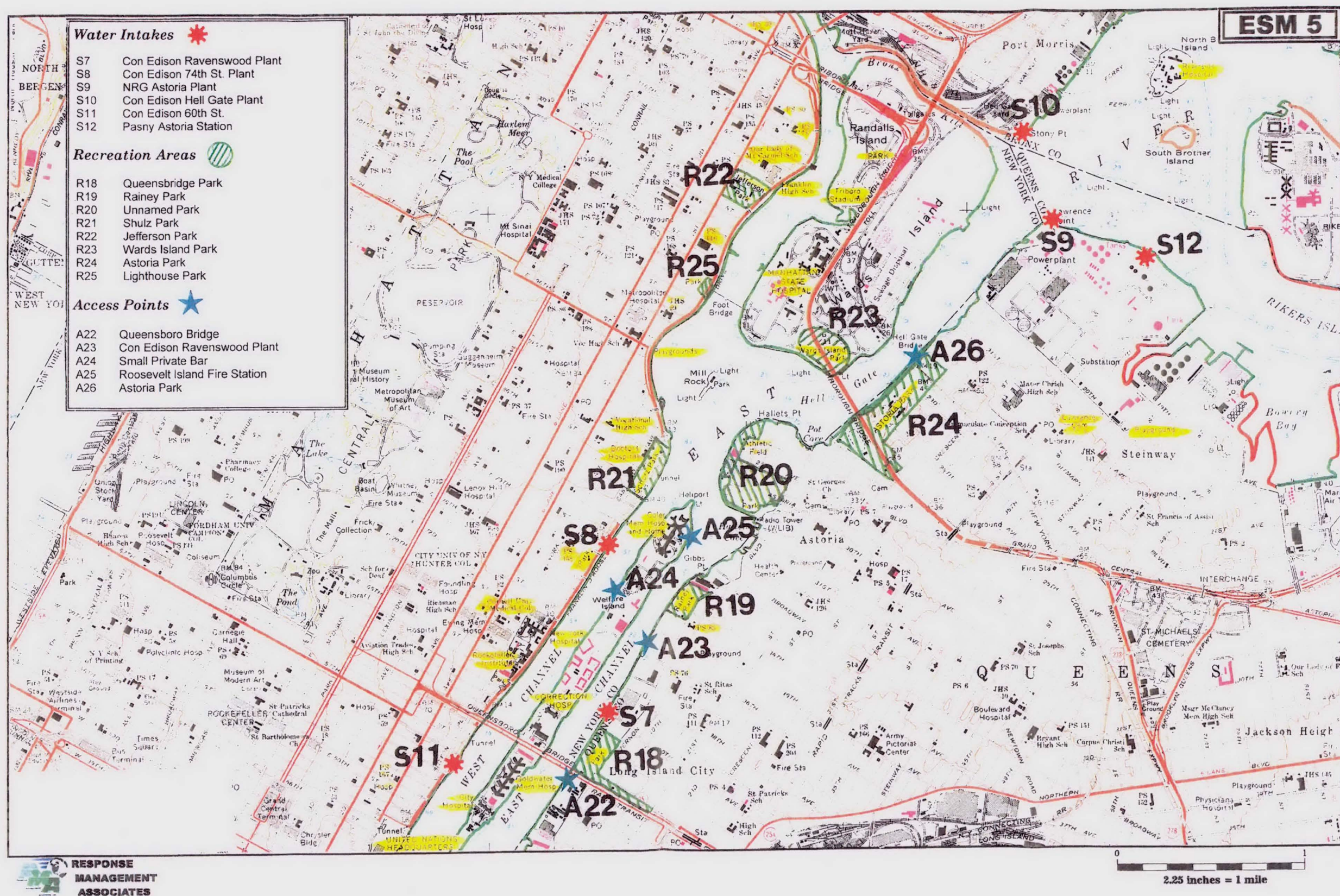


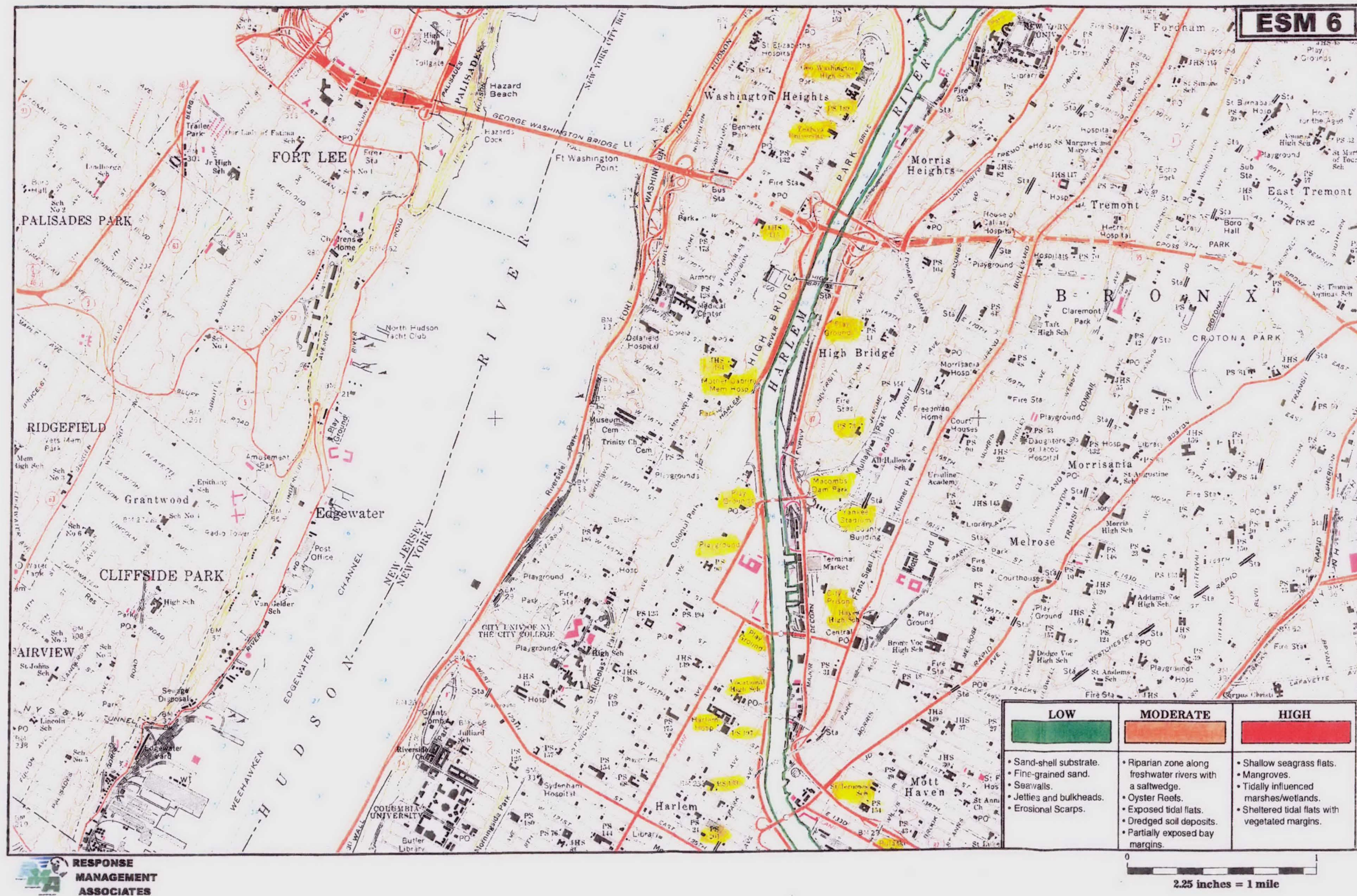


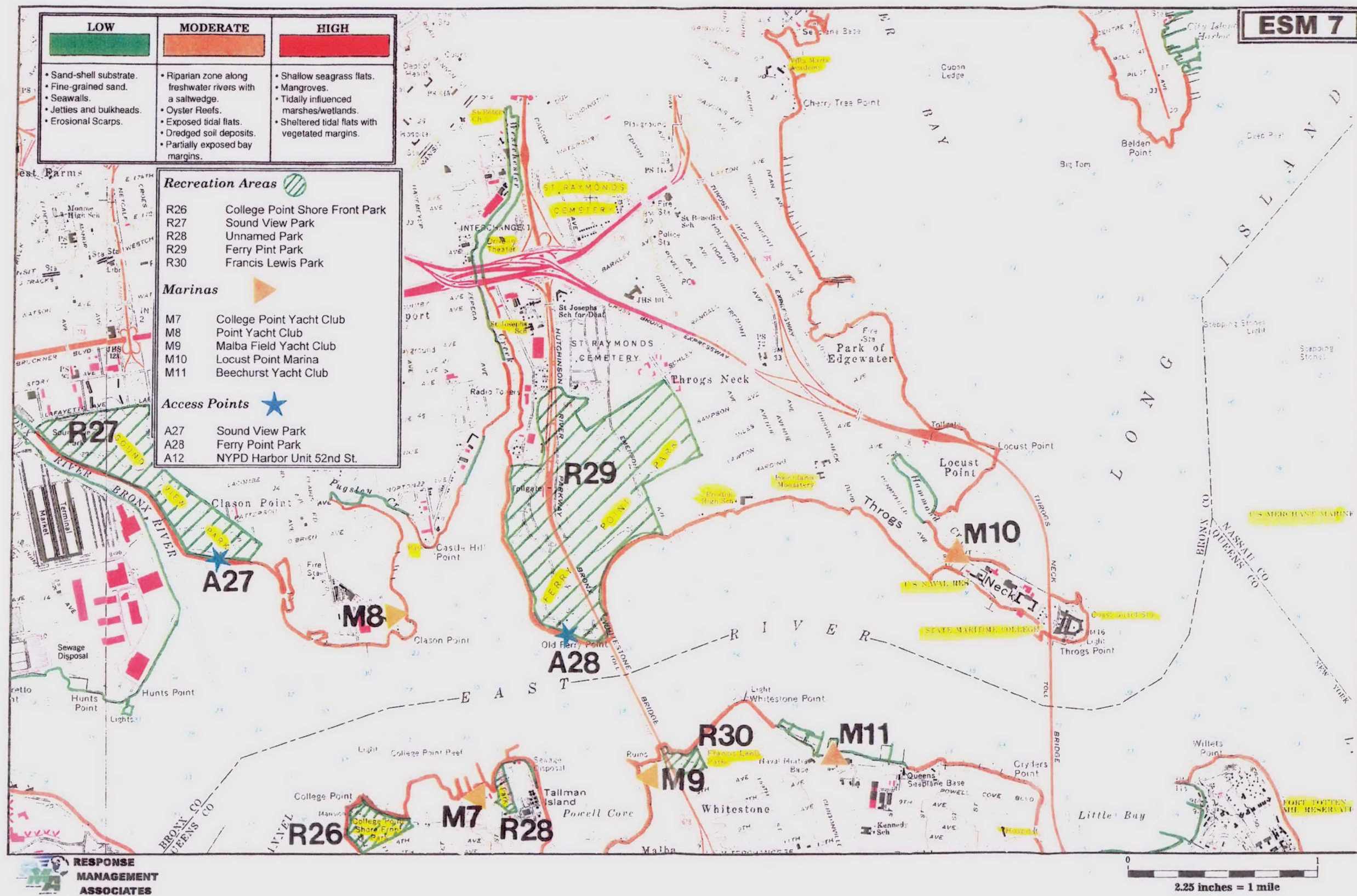












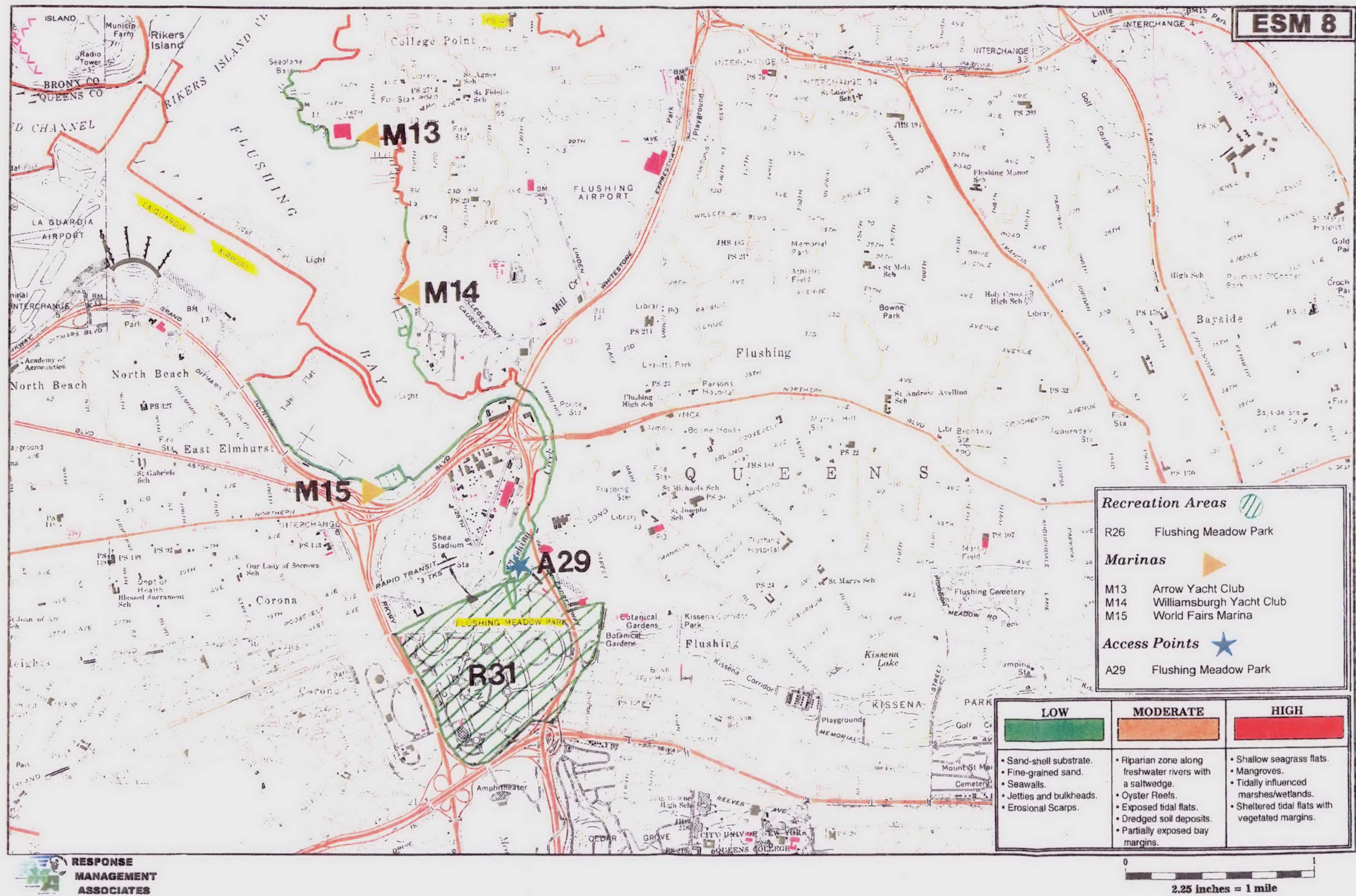
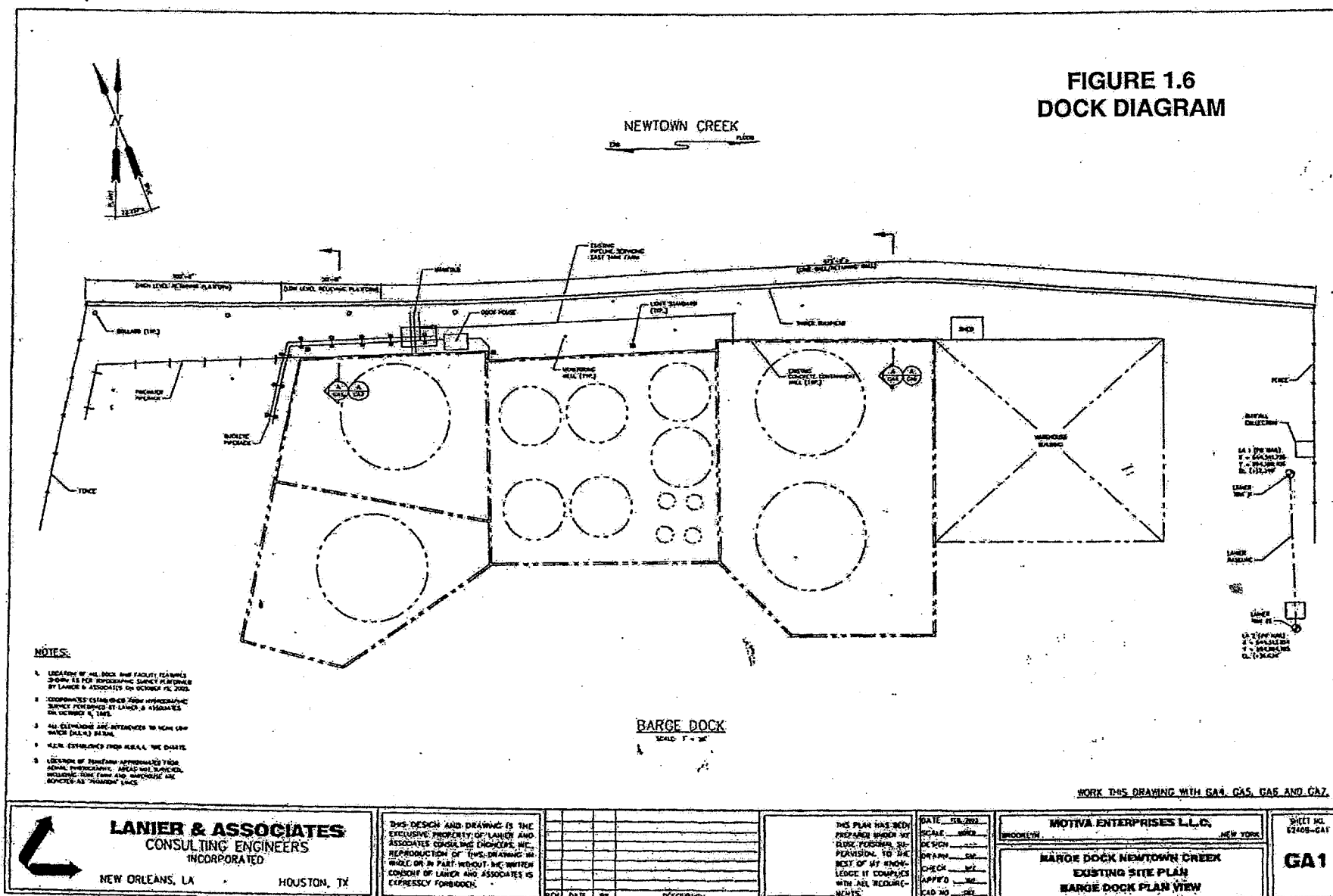


Figure 1.6 - Dock Diagram

**FIGURE 1.6
DOCK DIAGRAM**



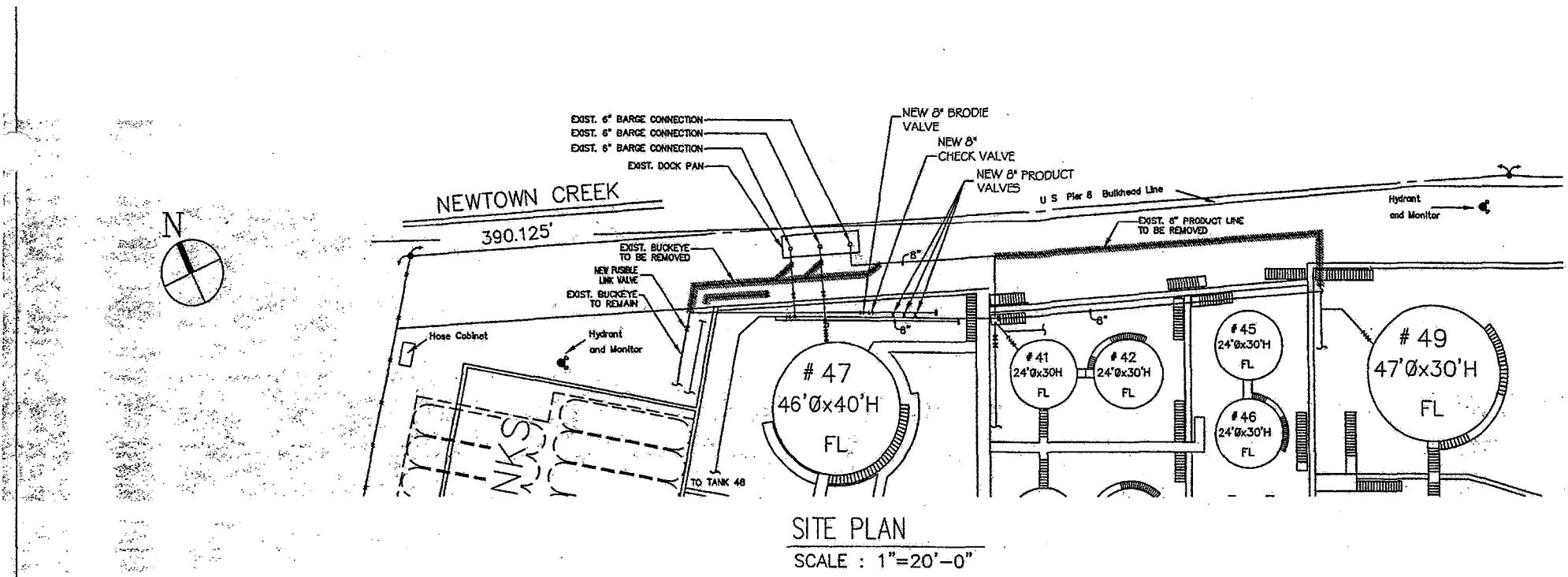
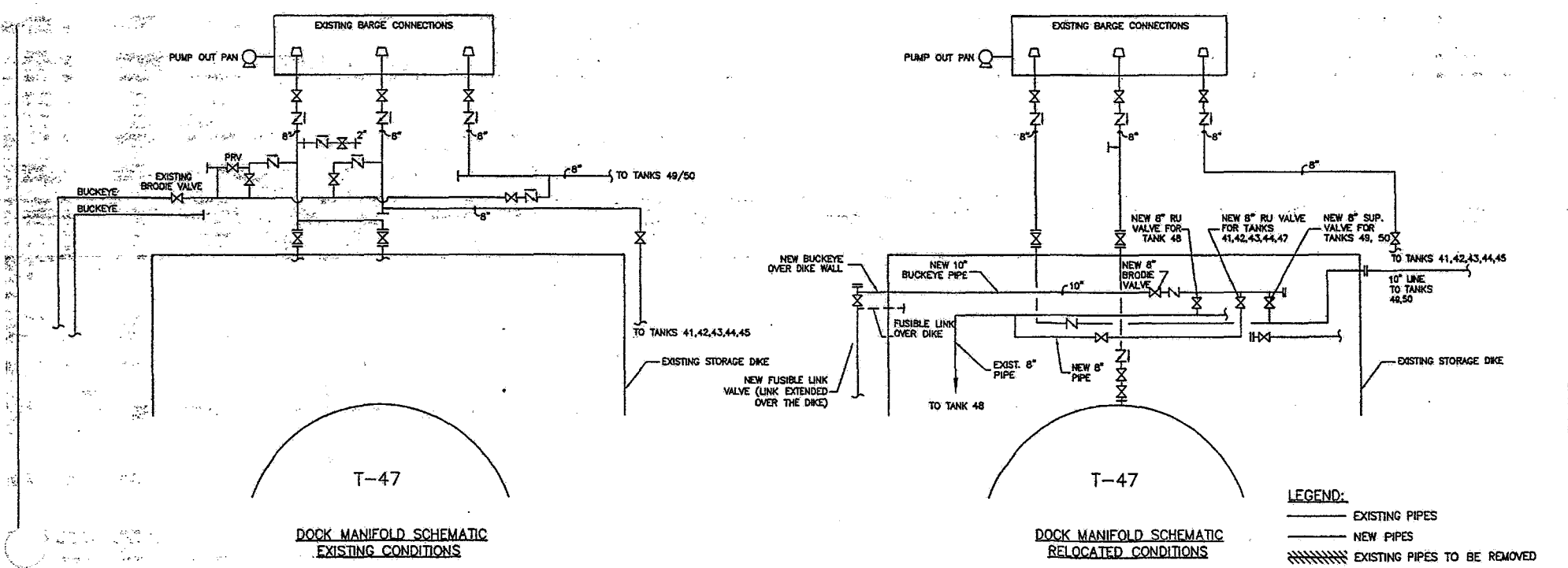


FIGURE 1.6 (a)



- GENERAL NOTES:
1. ALL WORK SHALL COMPLY WITH APPLICABLE N.Y.C. BUILDING CODES.
 2. ALL WORK SHALL COMPLY WITH APPLICABLE N.Y.C. FIRE DEPT. CODES AND C-27-4053.
 3. ALL NEW PIPING TO BE SCHEDULE 40 STEEL.
 4. ALL NEW VALVES TO BE 150 # RATED.
 5. ALL WELDING TO BE DONE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY, N.Y.C. BUILDING CODE, AND PERFORMED BY A CERTIFIED WELDER.
 6. ALL PIPING TO BE HYDROSTATICALLY TESTED TO 100 P.S.I. MIN. OR 1-1/2 TIMES WORKING PRESSURE, WHICHEVER IS HIGHER, AND WITNESSED BY THE FIRE DEPT. INSPECTOR.
 7. ALL ASSOCIATED PIPING TO BE NEW.
 8. CONTRACTOR IS RESPONSIBLE TO MAINTAIN SAFETY AT THE WORK AREA DURING THE ENTIRE WORK PERIOD.
 9. ALL PIPING SHALL BE SUPPORTED ADEQUATELY.
 10. THERE WILL BE NO PIERCING OF DIKE WALLS FOR THE PROPOSED WORK.
 11. PROVIDE HIGH POINT VENTS AS REQUIRED.
 12. PROVIDE LOW POINT DRAINS AS REQUIRED.

REV	DATE	BY	DESCRIPTION	CHK'D	ISSD TO
1	08/15/03	SK	REVISED LOCATION OF PRODUCT VALVE		
MOTIVA ENTERPRISES LOCATION: 25 PAIDGE AVENUE, BROOKLYN, NEW YORK WALTER T. GORMAN, P.E., P.C. 115-14 BEACH CHANNEL DRIVE ROCKAWAY PARK, NY 11694 PHONE No.: 718-474-3400, FAX 945-5931 WWW.WTGPED.COM					
SCALE: AS SHOWN		DWG. DATE: 03/30/03			
DRAWN BY: SK		JOB No.: MOTIMD-K013			
CHECKED CAD:		APPL No.:			
CHECKED PM:		SHEET 2 OF 3		CAD No.: SK9105MI	
BARGE UNLOADING MANIFOLD					

ANNEX 2.....NOTIFICATIONS

2.1 EMERGENCY RESPONSE INFORMATION

The information in this section describes what will be needed in an emergency involving the discharge of petroleum products or a combination of hazardous substances and petroleum products.

a) Internal Notifications: In the event of a spill, the spill observer will immediately sound the emergency alarm and notify the Qualified Individual (QI) or the Alternate Qualified Individual (AQI). The QI / AQI will make further Internal Notifications, as appropriate, depending upon to size and / or severity of the incident, by calling the Regional Manager; Manager, LSDR/HSE and Emergency Management, and Communications Officer. The QI / AQI may call the Motiva Enterprises LLC Emergency Management, Preparedness, and Response for support if necessary.

b) Community Notifications: If community notification and / or evacuation is necessary, the local Police Department will be contacted. The Local Area Evacuation Plan (LAEP) will be activated. The Company's Communications Officer will assist with radio and television announcements.

With assistance of the Local Emergency Planning Committee, the Fire Department, the Oil Spill Response Contractor, and the Red Cross, areas downstream of the incident will be alerted of the situation.

c) Federal and State Agency Notifications: The Incident Commander (QI / AQI) will ensure that all notifications are carried out in a timely manner. The following agencies should be notified as soon as possible:

United States Coast Guard – Local Marine Safety Office
*National Response Center
*Federal Environmental Protection Agency
State Agencies

*When calling the National Response Center or the EPA, include the following statement:

"This call fulfills any reporting obligations we may have, if any, pursuant to applicable laws and regulations including, but not limited to the Toxic Substances Control Act, Section 8 (e)."

2.1.1..... Emergency Notification Phone List

The Emergency Notification Telephone Numbers are provided in the Core Plan. The Facility Response Team members and telephone numbers are listed in the same section.

2.1.1.1.... How to Report a Spill

The instructions on how to report a spill and the Spill Notification Form are contained in the Core Plan.

It is the intent of the Facility personnel to notify the appropriate authorities and Company personnel of a spill as soon as possible. This will be done even if the spill reporting is for information purposes only and no assistance is required.

Motiva Enterprises LLC has a standing policy that all reportable spills will be reported as soon as practical.

All spills will be accompanied by a written report that will be forwarded to the Regional Manager for the assigning of an incident number. This form is used to track all spills, releases and discharges.

SITE SAFETY PLAN

I. General - Spill / Release

☐ Land ☐ Air ☐ Water ☐ HAZMAT ☐ Other: _____

Facility: _____

Location: _____

Objectives: _____

Operational Period: Date _____ Time: _____ to _____

II. Hazards to be Evaluated

<p>Y N</p> <p><input type="checkbox"/> <input type="checkbox"/> Oxygen Deficient/Enriched</p> <p><input type="checkbox"/> <input type="checkbox"/> Flammable Atmosphere</p> <p><input type="checkbox"/> <input type="checkbox"/> Toxic Atmosphere: _____</p> <p><input type="checkbox"/> <input type="checkbox"/> Boat Operations</p>	<p>Y N</p> <p><input type="checkbox"/> <input type="checkbox"/> Chemical/MSDS # _____</p> <p><input type="checkbox"/> <input type="checkbox"/> Physical Site Hazard _____</p> <p><input type="checkbox"/> <input type="checkbox"/> Traffic _____</p> <p><input type="checkbox"/> <input type="checkbox"/> Other* (see comments) _____</p>
--	--

III. Weather

Skies: _____ Tide: _____ Water Temperature: _____

Temperature: _____ Current: _____ Kts. Current Direction: _____

Wind Velocity: _____ Wind Direction: _____

IV. Control Measures

Isolation & Lockout (Identify items to be locked out): _____

Decon: _____

Ventilation: ☐ Natural ☐ Mechanical: _____ Continuous: ☐ No ☐ Yes

Flagman/Watchman: _____

V. Testing & Monitoring (Check required items)

Tests are to be performed in the order listed.

Y N		Continuous	Frequency
<input type="checkbox"/> <input type="checkbox"/>	Oxygen Level	<input type="checkbox"/> Y <input type="checkbox"/> N	every _____
<input type="checkbox"/> <input type="checkbox"/>	LEL	<input type="checkbox"/> Y <input type="checkbox"/> N	every _____
<input type="checkbox"/> <input type="checkbox"/>	Hydrogen Sulfide	<input type="checkbox"/> Y <input type="checkbox"/> N	every _____
<input type="checkbox"/> <input type="checkbox"/>	Benzene	<input type="checkbox"/> Y <input type="checkbox"/> N	every _____
<input type="checkbox"/> <input type="checkbox"/>	VOC: _____	<input type="checkbox"/> Y <input type="checkbox"/> N	every _____
<input type="checkbox"/> <input type="checkbox"/>	Other: _____	<input type="checkbox"/> Y <input type="checkbox"/> N	every _____

ACCEPTABLE ENTRY CONDITIONS

SPECIAL WORK PRACTICES OR PPE REQUIRED	WORK EFFORTS SHOULD BE DIRECTED AT REDUCING CONCENTRATIONS
19.5 – 22.0% in air*	< 19.5% or 22.0% in air*
< 10% in air	≥ 10.0 but < 20.0% in air†
< 10 ppm	≥ 10 but < 100 ppm
< 1 ppm	≥ 1 but < 3000 ppm

As allowed by applicable standard(s) *Acceptable for 5325 feet of elevation and below.
†Hot work is not permitted when LEL is greater than 10% in air.

VI. Required Personal Protective Equipment (Check for required use)

General	Eye Prot.	Respiratory Prot.	Hearing Prot.	Gloves	Footwear	Clothing
<input type="checkbox"/> Hard Hat	<input type="checkbox"/> Safety Glasses	<input type="checkbox"/> SCBA/Air Line w/Escape	<input type="checkbox"/> Ear Plugs	<input type="checkbox"/> Leather	<input type="checkbox"/> Steel-toes	<input type="checkbox"/> FR Coveralls
<input type="checkbox"/> Safety Harness	<input type="checkbox"/> Goggles	<input type="checkbox"/> Air Line	<input type="checkbox"/> Ear Muffs	<input type="checkbox"/> Rubber	<input type="checkbox"/> Rubber	<input type="checkbox"/> Level A
<input type="checkbox"/> PFD	<input type="checkbox"/> Face-shield	<input type="checkbox"/> Air Purifying (Full Mask)	<input type="checkbox"/> Combination	<input type="checkbox"/> Nitrile	<input type="checkbox"/> Hip-boots	<input type="checkbox"/> Level B
	<input type="checkbox"/> Tinted Lens	Cartridge Type: <input type="checkbox"/> OV <input type="checkbox"/> Hepa-OVV		<input type="checkbox"/> PVC	<input type="checkbox"/> Chemical Resistant	<input type="checkbox"/> Level C
				<input type="checkbox"/> _____	<input type="checkbox"/> _____	<input type="checkbox"/> Level D

Any other special PPE: _____

VII. Emergency Information and Rescue Services

Emergency Contact Person: _____	Contact by: _____
Fire Department: _____	Contact by: _____
Ambulance: _____	Contact by: _____
Hospital: _____	Contact by: _____
Rescue Services: _____	Contact by: _____

(if not provided by above)

VIII. Required Safety & Rescue Equipment (on site)

☐ Lights ☐ Fall Protection ☐ First Aid Kit ☐ Drinking Water ☐ Fire Extinguisher ☐ Tripod ☐ Other: _____

☐ Ladder ☐ Retrieval Lines ☐ Defibrillator ☐ Communication Method _____

IX. Comments or Special Work Procedures

X. Report All Injuries Immediately - "Notify Site Safety Officer"

Radio Channel: _____ Radio Frequency: _____ Telephone No. _____

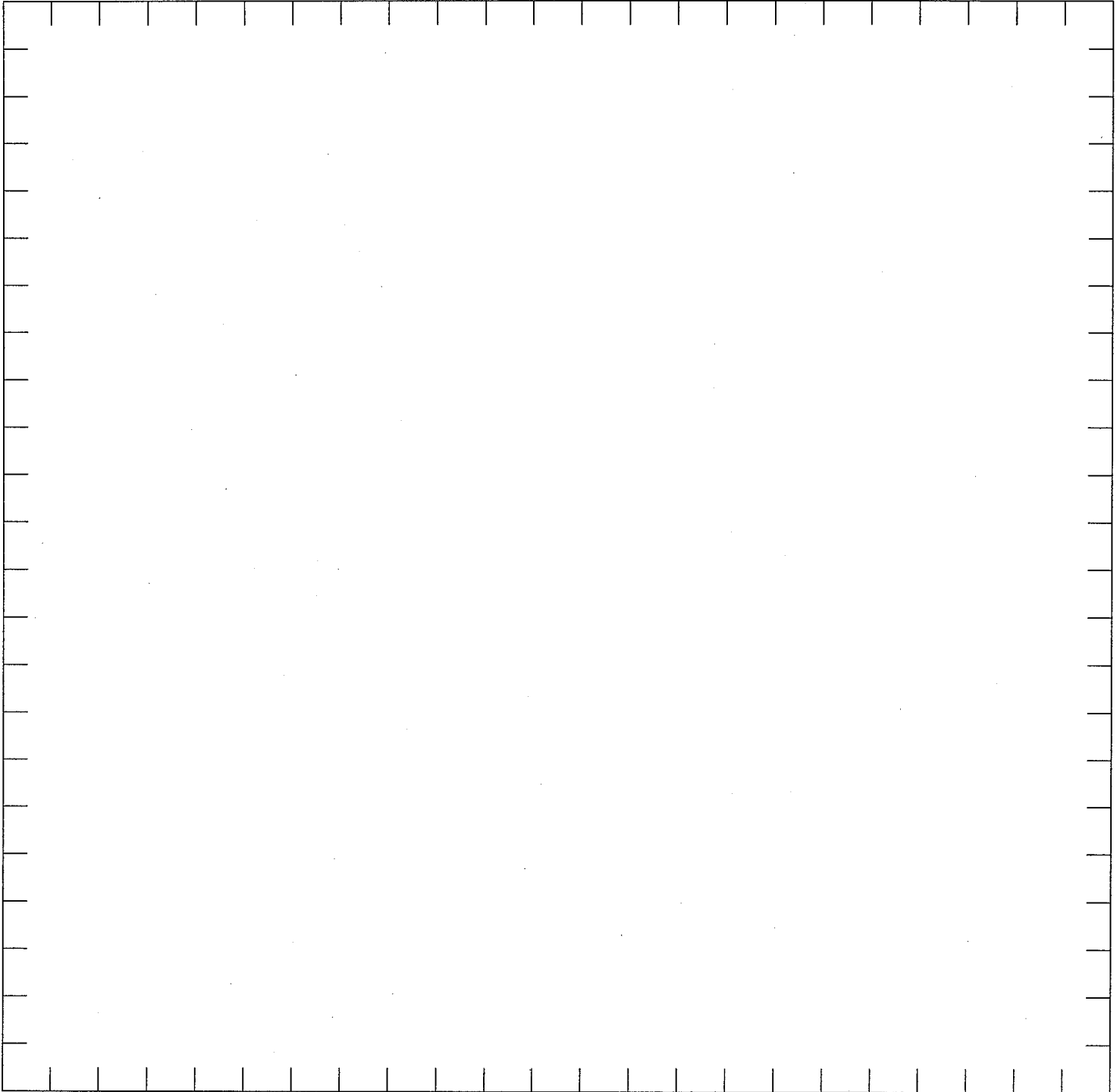
Call 911 if life threatening

XI. Monitoring Results		Zone																	
Oxygen	Time																		
	Level																		
	By																		
LEL	Time																		
	Level																		
	By																		
Hydrogen Sulfide	Time																		
	Level																		
	By																		
Benzene	Time																		
	Level																		
	By																		
VOC	Time																		
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	By																		
	Time																		
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	Level																		
	By																		

Equipment: Type: _____ Mnfr: _____ Calibration / Expiration: _____
 Type: _____ Mnfr: _____ Calibration / Expiration: _____

XII. Work Area Diagram

Please include wind direction, exclusion zone, support zone, decon area and significant landmarks.



[illegible]

Site Manager: Printed Name: _____

Signature: _____

Shell/Motiva 0008572

EMP&R NOTIFICATION LOG

Person on the EMP&R staff to whom you relayed this emergency information:

Name: _____

Phone: (____) _____

Time: ____:____ AM or PM (circle one) Time Zone: EST or CST

Document any calls or actions that you take in regard to this Emergency Call
(including calls where you leave a message):

Follow-up call:	Time Called:

Follow-up call:	Time Called:

Follow-up call:	Time Called:

Follow-up call:	Time Called:

ANNEX 3.a RESPONSE TEAMS

3.a..... INTRODUCTION

This section describes organizational features and duties of the Local Response Team (LRT) and the Tier II and III Response Team. The Tier II and III Team are managed by Emergency Management (EM).

The key to an effective emergency response is a rapid, coordinated, tiered response by the affected unit/facility, AWAY Team, and/or National Response Team, consistent with the magnitude of an incident.

The Local Response Team will provide first response to an incident at a Facility. Emergency Management (EM)-managed Teams will respond, to the degree necessary, to incidents exceeding local capability and when requested. If additional assistance is needed, the Local Incident Commander will activate the EM-managed Teams, which may include:

- An AWAY Team
- A National Response Team (NRT)
- The Houston Support Center (HSC)
- A Corporate Emergency Response Team (CERT)
- The SOP US/Motiva Crisis Management Team (CMT)

Shell & Motiva Response Teams use the NIMS Incident Command System (ICS) to manage emergency response activities. Because ICS is a management tool that is readily adaptable to incidents of varying magnitude, it will be used for all emergency incidents. Staffing levels will be adjusted to meet specific response team needs, based on incident size, severity, and type of emergency.

An explanation of ICS and the roles and responsibilities for primary members of the Local Response Team is provided in Annex 3.a.5.

3.a.1.....LOCAL RESPONSE TEAM

The first Alliance person on scene will function as the person-in-charge until relieved by an authorized/trained supervisor who will then assume the position of Incident Commander (IC). Transfer of command may take place as more senior management respond to the incident. For response operations within the control of the Local Response Team, the role of IC will typically be assumed and retained by Terminal Management.

The number of positions/personnel required to staff the Local Response Team will depend on the size and complexity of the incident. The duties of each position may be performed by the IC directly or delegated, as the situation demands.

The IC is always responsible for directing the response activities and will assume the duties of all the primary positions until the duties can be delegated to other qualified personnel.

Refer to the job descriptions detailed in this annex for the primary response team positions.

A complete ICS organization is shown in Figure 3.3. The LRT should try to fill the positions and request additional support from the Emergency Management, Preparedness, and Response Team to fill/back up all of the remaining positions, as the incident dictates. Telephone reference is provided in the Core Plan.

3.a.2.....EM-MANAGED RESPONSE TEAMS

Motiva management resources available for incident response include:

- A National Response Team
- AWAY Team
- Houston Support Center (HSC)
- Corporate Emergency Response Team (CERT)
- SOP US/Motiva Crisis Management Teams

3.a.2.1National Response Team

Motiva has resources through one National Response Team (Figure 3.1) that covers incidents that require a Tier III response.

A National Response Team, once fully staffed, is designed to cover all aspects of a comprehensive and prolonged incident response. During a prolonged response, additional personnel from within the Company may be cascaded in, and more than one level within the Team may be involved to sustain 24-hour operations.

3.a.2.2National Response Team Organization

The National Response Team is organized according to Incident Command System principles (Figure 3.2). Led by Unified Command, the team includes the following principal components:

- Command Staff
- Operations
- Planning
- Logistics
- Finance

The complete ICS organization of the National Team is shown in Fig. 3.3.

3.a.2.3Membership

The National Team is staffed by specially trained personnel from various Shell and Motiva business units as well as consultants.

3.a.2.4AWAY Team

The AWAY Team is a component of the National Response Team, and is composed of designated, Houston-based personnel from various Shell and Motiva departments. Upon activation, the AWAY Team will preliminarily:

- Assess the magnitude of the incident and its potential impact;
- Estimate the level of effort necessary for minimizing its impact; and
- Depart to the scene of an incident from the Shell Corporate Hanger at Houston Bush Intercontinental Airport as soon as possible typically within two hours after being activated.

Once on scene, the AWAY Team will use the Incident Command System to:

- Manage the incident response; or
- Support the Local Team by integrating with the local response organization, providing liaison to government agencies and the news media, supporting or taking over any duties mutually agreed to, and helping keep the HSC and the SOP US/Motiva CMT informed.

The AWAY Team organization is shown in Figure 3.3.

3.a.2.5Houston Support Center

When activated, the Houston Support Center (HSC) will be staffed to provide 24-hour Facility support, including managing field activities from the HSC until the AWAY Team and/or National Team arrives on scene.

For vessel incidents, the HSC will be the initial command post and Spill Management Team until an AWAY Team and/or National Team arrives and a new Incident Command Post is established. Once this is complete, the HSC will support the incident until no longer needed.

The basic HSC organization is shown in Figure 3.4.

3.a.2.6Corporate Emergency Response Team

The Corporate Emergency Response Team (CERT) is a cross functional team of emergency responders from the operating business units. CERT members possess skills in one or more of the following areas:

- Incident Command
- Safety Officer

- Medical Unit Leader
- Operations Skill Pool
 - Fire fighting leadership
 - Hazardous materials response
 - Rescue
 - Planning Section Chief

CERT members may be activated to respond to any non-oil spill emergency. In the event ICS support positions are required that are external to the CERT, personnel from the National Response Team will fill those positions.

3.a.2.7Shell Oil Products US/Motiva Crisis Management Teams

The SOP US/Motiva Crisis Management Teams manage crisis-related issues at the SOP US/Motiva Executive Leadership level. The Teams provide guidance on issues that have the potential to significantly impact the Company's reputation or operations, or pose a significant legal, regulatory, or financial liability.

The appropriate CEO, in accordance with the SOP US/Motiva Crisis Management Plan, will activate the SOP US/Motiva Crisis Management Team.

3.a.3.....RESPONSE TEAM TRAINING

Shell and Motiva require that all response personnel, including contractors and casual labor, have the appropriate training necessary to serve on a response team during an emergency. Local team members will receive training in the Facility Response Plan.

Each Local Response Team Member should review the Facility Response Plan whenever the Member's job position or responsibilities change under the Plan. A copy of this Plan will be available at all times to Team Members.

3.a.3.1HAZWOPER (29 CFR 1910.120)

Federal and state regulations require that response team members maintain up-to-date HAZWOPER training necessary to function in their assigned positions. At a minimum, Motiva employees will receive "First Responder Operations Level" training. All "contract" personnel responding to a Shell or Motiva incident must be certified in accordance with the applicable HAZWOPER training requirements of 29 CFR 1910.120.

3.a.3.2Incident Command System

Response team members will receive ICS training, and may also receive supplemental training in other related general topics.

3.a.3.3Volunteers

Motiva will not use volunteers for response to an incident, if no Company provisions exist to train them. Volunteers may be used by government response entities, as allowed by applicable policies/ procedures.

3.a.3.4Training Records

Training records for local team members are available, if needed, according to Federal, state, and local government requirements.

3.a.4.....RESPONSE TEAM EXERCISES

Local and National Team members, government agencies, contractors, and other resources must participate in response exercises required by Federal, state, or local regulations and as detailed in the "National Preparedness for Response Exercise Program (PREP) Guidelines." Shell and Motiva will conduct announced and unannounced drills to maintain compliance, and each plan-holder must conduct at least one exercise annually.

The following table lists the triennial exercise cycle for facilities (see PREP Guidelines for full details).

Triennial Cycle		
Total Number	Frequency	Exercise Type/Description
12	Quarterly	QI Notification Exercise
6	Semi-Annual	Equipment Deployment Exercise (<i>Facility-owned equipment</i>)
3	Annual	Response Team Tabletop Exercise
3	Annual	Equipment Deployment Exercise (<i>facilities with OSRO-owned equipment</i>)
3	Annual	Unannounced Exercise (<i>not a separate exercise</i>) Actual response can be considered as an unannounced exercise.
NOTE: All response plan components must be exercised at least once in the Cycle.		

3.a.4.1.....Quarterly QI Notification Exercise

- **Scope:** Exercise communication between Facility personnel and the QI(s) and/or designated alternate(s). At least once each year, one of the notification exercises should be conducted during non-business hours.
- **Objective:** Contact must be made with a QI or designated alternate, as identified in the Plan.
- **General:** All personnel receiving notification shall respond to the notification and verify their receipt of the notification. Personnel who do not respond should be contacted to determine whether or not they received the notification.

3.a.4.2.....Semi-Annual Equipment Deployment Exercise (for facilities with response equipment)

- **Scope:** Deploy and operate Facility response equipment identified in the response plan. The equipment to be deployed must include the following, at a minimum:
 - 1,000 feet of representative type of boom;
 - One of each type of skimming system; or
 - The equipment necessary to respond to the Facility's Small/Average Most Probable Discharge (AMPD), whichever is less.
- **Objective:** Demonstrate personnel's ability to deploy and operate response equipment. Ensure that the response equipment is in proper working order.
- **General:** The Facility may take credit for actual equipment deployment to a spill, or for training sessions, as long as the activities are properly documented.

3.a.4.3.....Annual Equipment Deployment Exercise (OSRO-owned equipment)

- **Review:** The Facility should determine that the OSRO(s) has completed the equipment deployment exercise requirements and has maintained the necessary documentation. The OSRO may deploy equipment at any location, so long as it occurs within an operating environment similar to the Facility's.
- **Scope:** OSRO must deploy and operate response equipment identified in the response plan. The equipment to be deployed must include the following, at a minimum:
 - 1,000 feet of representative type of boom.
 - One of each type of skimming system.

- **Objective:** OSRO must demonstrate the ability of the personnel (OSRO) to deploy and operate response equipment (OSRO). Ensure that the response equipment (OSRO) is in proper working order.

3.a.4.4... Annual Response Team Tabletop Exercise

- **Scope:** Exercise the response team's organization, communication, and decision- making in managing a spill response. Each team identified within the plan must conduct an annual Response Team Tabletop Exercise.
- **Objective:** Exercise the response team in a review of the following:
 - Knowledge of the Plan.
 - Proper notifications.
 - Communications system.
 - Ability to access an OSRO.
 - Coordination of internal spill response personnel.
 - Review of the transition from a local team to a regional team.
 - Ability to effectively coordinate response activity with the National Response System (NRS) infrastructure.
 - Ability to access information in the Area Contingency Plan.
- **General:** A minimum of one Response Team Tabletop Exercise in a triennial cycle will involve a Worst-Case Discharge scenario.

3.a.4.5.....Exercise Documentation

- All exercises should be documented and maintained at the Facility; documentation should specify:
 - The type of exercise;
 - Date and time of the exercise;
 - A description of the exercise;
 - The objectives met in the exercise;
 - The components of the response plan exercised; and
 - Lessons learned.

Figure 3.1

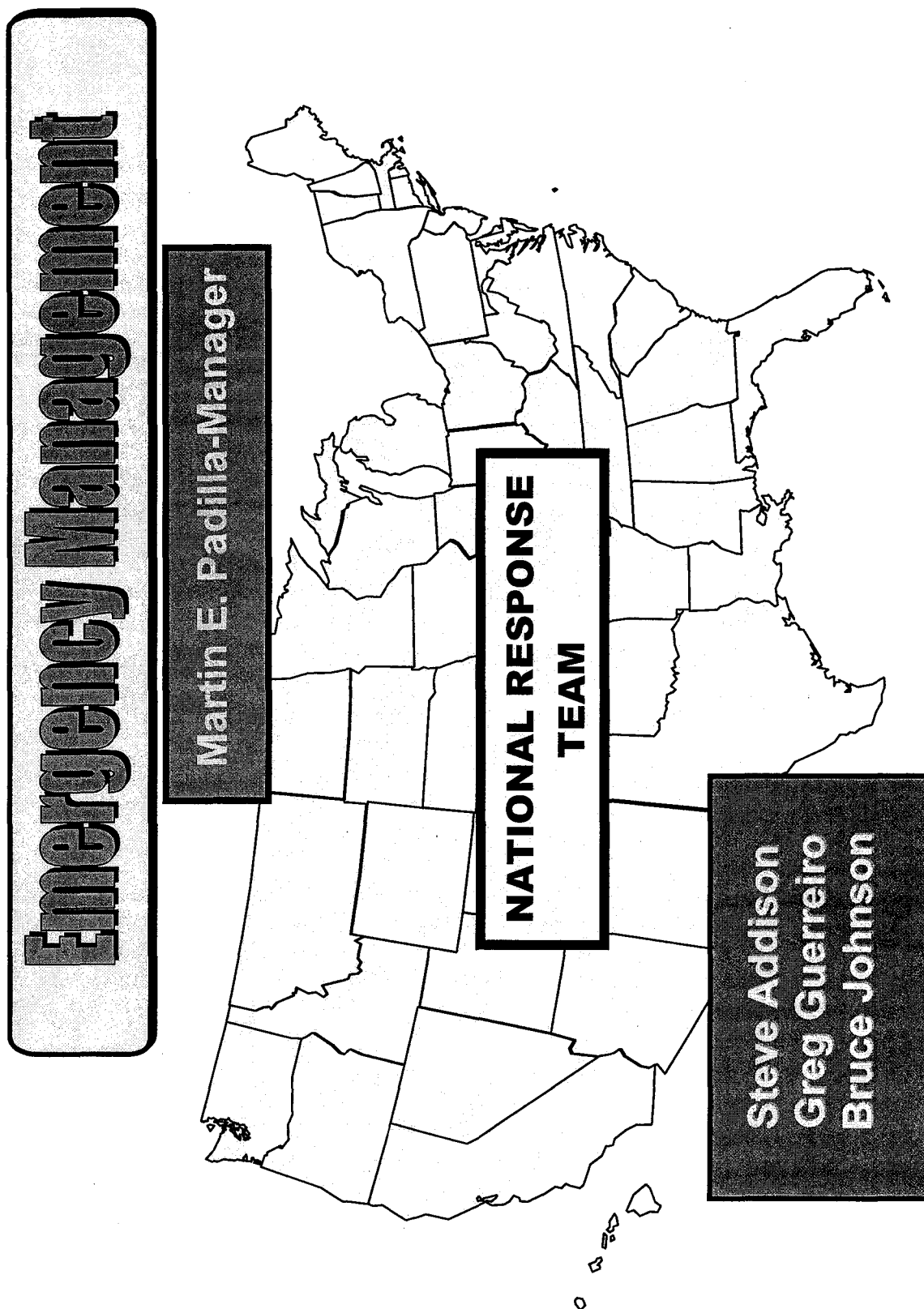


Figure 3.2

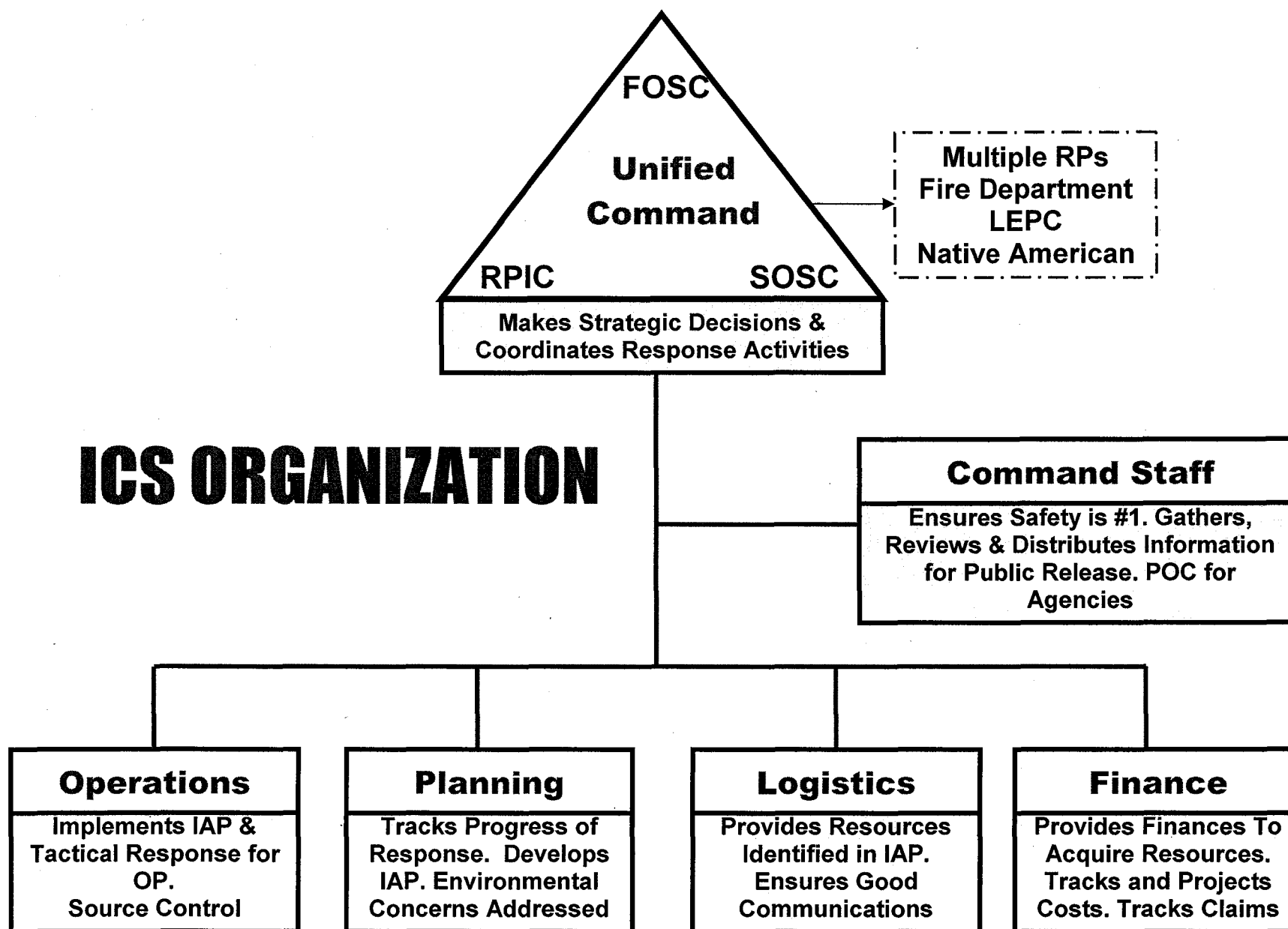


Figure 3.3

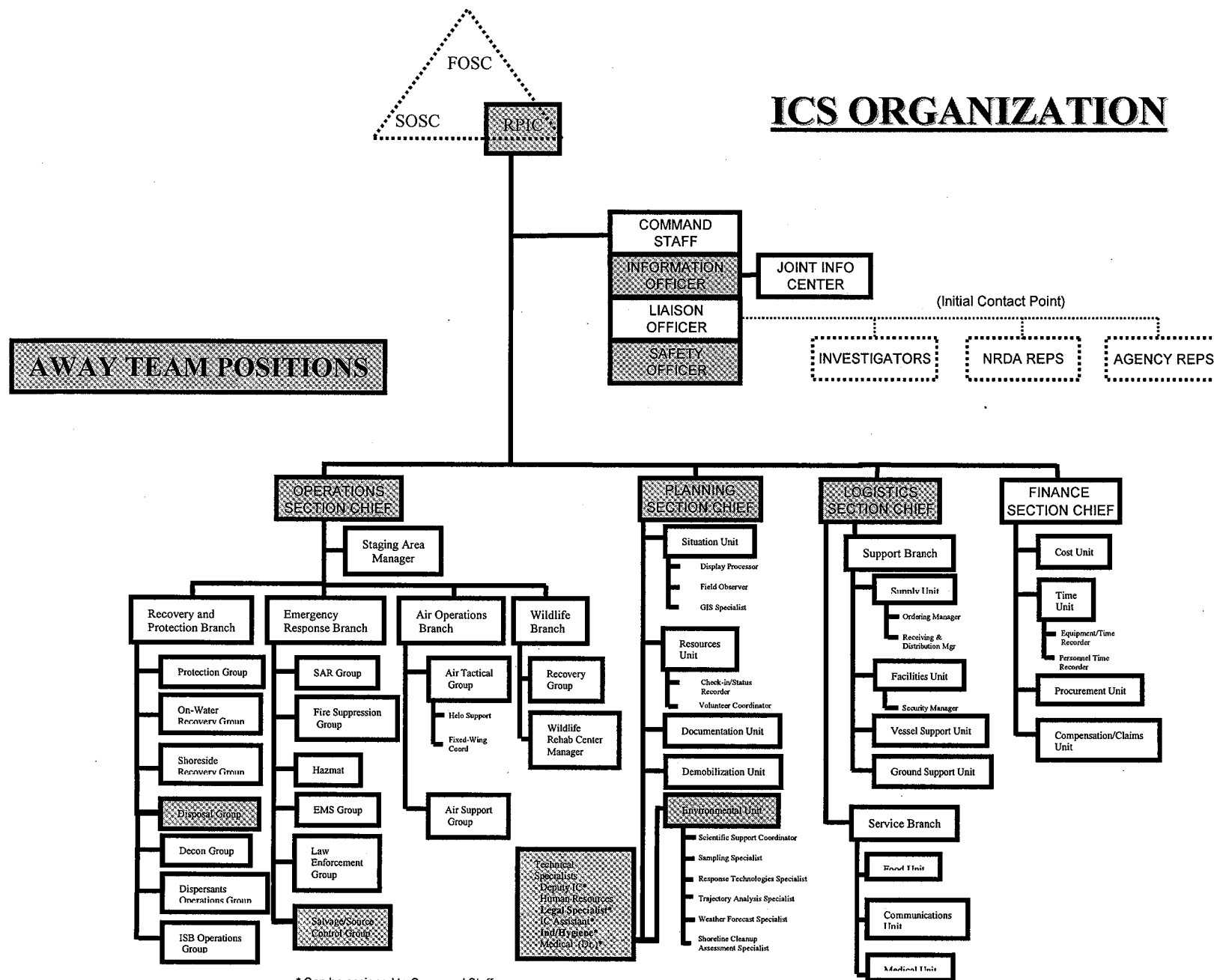
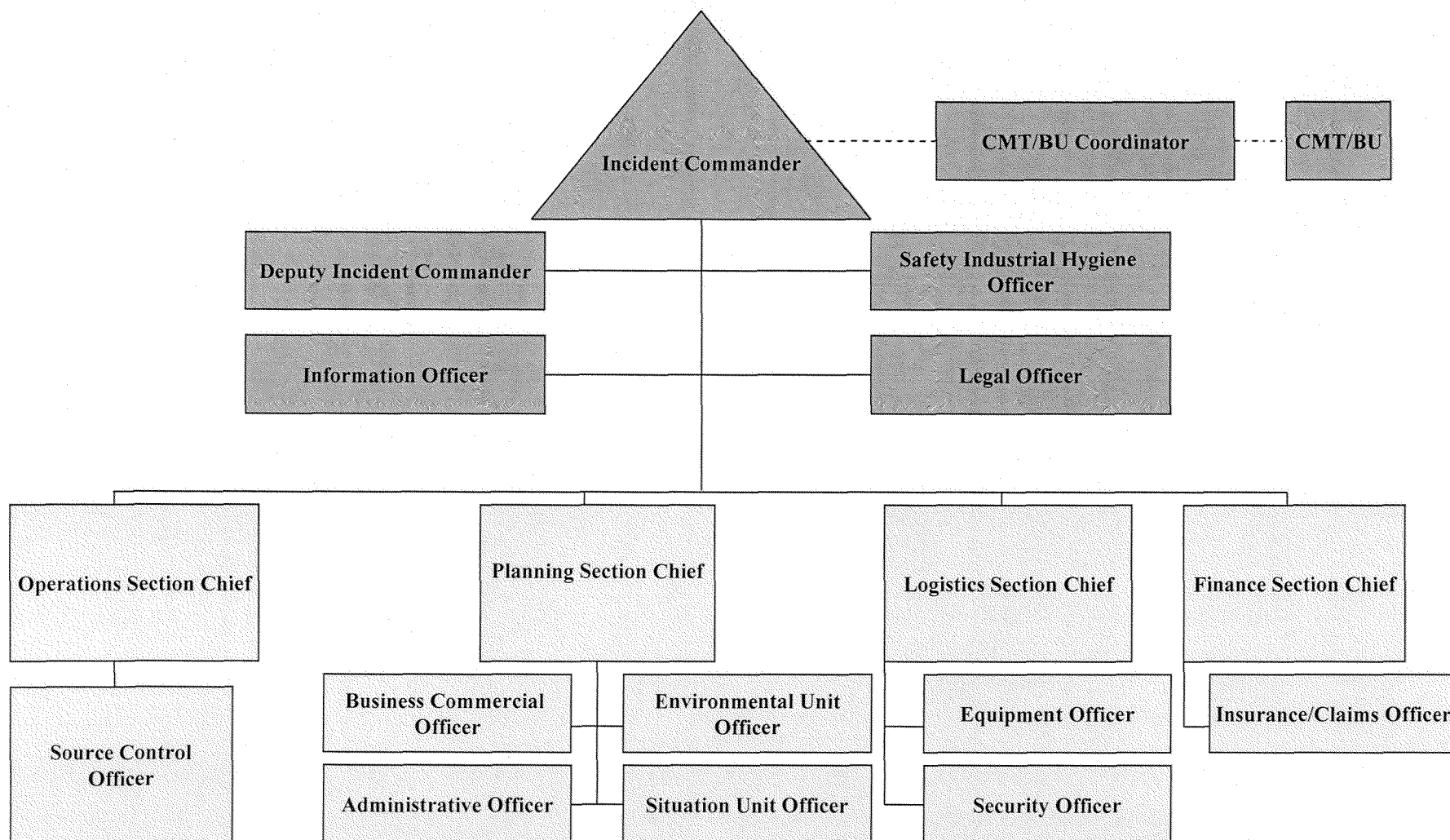


Figure 3.4

HSC Organization (ICS)



3.a.5JOB DESCRIPTIONS

3.a.5.1 Local On-Scene Commander / Qualified Individual

The local On-Scene Commander (OSC) coordinates the activities of all personnel involved with administrative, technical, containment and clean-up operations at the spill scene and is designated as the Motiva Enterprises LLC QI. The local OSC assigns responsibility to various persons to act, but has final authority for any on-scene decision and, as such, is designated as the Motiva Enterprises LLC QI. A minimum of two people is required for 24-hour operation. However, one should be designated as the Senior Company Representative.

Scope of Responsibility

The local OSC is responsible for the implementation, effectiveness, and cost of the entire oil spill clean-up operation. This individual has complete authority over clean-up personnel at the spill scene. Typical, the local OSC will respond as follows to a spill incident:

Start Up

- ◆ Upon notification of an incident, the local OSC decides the initial start-up strategy and conducts a site investigation.
- ◆ Call out selected members of the Oil Spill Response Team.
- ◆ Consult with appropriate response team members to develop strategy for continuing response and any salvage operation.
- ◆ Establish and implement response priorities.
- ◆ Authorize procurement of equipment, manpower, and services identified to be necessary.
- ◆ Keep senior management informed of situation.
- ◆ Attend press/local audience conference(s) using agreed releases as basis for response.
- ◆ Notify government agencies of proposed activities.

Daily

- ◆ Hold a planning meeting with advisors and the Oil Spill Response Team.
- ◆ Meet with government agencies to obtain agreement on acceptable levels of response and environmental cleanup.
- ◆ Conduct a site inspection to make sure objectives are being accomplished.

- ◆ Meet with media representatives upon request of the Communications Officer.
- ◆ Evaluate and adjust response priorities.
- ◆ Transmit an updated situation report and press release to Senior Management.
- ◆ Maintain a log of these activities.

Periodic

- ◆ Authorize procurement of additional equipment, manpower, and services, as required.
- ◆ Approve invoices not delegated to support personnel for payment.
- ◆ Attend press/local audience conferences at the request of the Communications Officer.

Stand Down

- ◆ Ensure that the Support Coordinator, before leaving site, is provided with a copy of any notes or observations made by team members during the operation for use at the post-incident stewardship meeting.
- ◆ Convene post-incident stewardship meeting approximately four (4) weeks after stand down.
- ◆ Monitor training programs.
- ◆ Monitor the Oil Spill Response Team structure.

Points to Consider

1. Oil Spill cooperatives and contractors may be the best source for immediate equipment needs.
2. Provide frequent press statements and public meetings, when appropriate, to keep the public informed.
3. Plan for the worst-case situation when emergencies occur.
4. During emergencies, many people become instant experts. Always require consultants and technical personnel to support their recommendations with proven examples and data.

3.a.5.2Field Operations Coordinator (Terminal Employee)

The Field Operations Coordinator is in charge of the field operations relating to the oil spill cleanup and, as such, is designated Alternate Qualified Individual (AQI). The AQI delegates responsibility to a number of field supervisors and superintendents and communicates frequently with the local OSC with updates on the various phases of the operations. The AQI also identifies the future requirements of his staff and arranges for more equipment and/or personnel as required.

Scope of Responsibility

The AQI is responsible for all field operations in the clean-up of the oil spill, including the following:

Start Up

- ◆ At the incident location, prepares input to and attends the local OSC's strategy and start-up planning meeting.
- ◆ Supervises the implementation of the agreed response plan.
- ◆ Evaluates the situation at the oil spill site to assess amount of oil to be removed and methods to be employed. Works with the Environmental and Regulatory Agency Advisors to establish if cleanup is to be attempted; if so, where and to what degree.

Daily

- ◆ Prepares for and attends the local OSC's planning meeting.
- ◆ Maintains regular radio contact with the local OSC.
- ◆ Monitors the effectiveness of containment, cleanup, and disposal operations—modifies these as necessary.
- ◆ Monitor effectiveness of procedures/equipment employed; makes recommendations to the local OSC as appropriate.
- ◆ Monitors the effectiveness of shore clean-up operations; makes recommendations, as appropriate, to the local OSC.
- ◆ Maintains a log of all of these activities.

Periodic

- ◆ Assumes control of the total incident response in the absence of the local OSC.

Stand Down

- ◆ Provides the Support Coordinator, before leaving site, with a copy of any notes or observations made during the operation for use at the post-incident stewardship meeting.
- ◆ Agrees with relevant government/local authorities that acceptable stand down conditions exist on each cleaned up site.
- ◆ Monitors developments in containment and recovery techniques and equipment.
- ◆ Maintains an up-to-date register of specialists in oil containment and recovery.

3.a.5.3 Environmental / Safety Advisor

The Environmental / Safety Advisor is familiar with the ecological effects of oil, dispersants, and the clean-up operations on the flora and fauna in the spill area. This individual may recommend against certain types of clean-up operations in environmentally sensitive areas where the effects due to the clean-up operation may be more severe than the effects of oil. The Environmental / Safety Advisor estimates the trajectory of the oil spill and determines priorities for cleanup.

The Environmental / Safety Advisor is an expert in the performance of booms, skimmers, sorbents, etc. This individual knows which equipment works best under the particular conditions of the spill and will advise on the purchase, rental, or other acquisition of the most cost-effective clean-up equipment. The Environmental / Safety Advisor recommends the methods to be used to contain and recover the oil. This individual's activities are coordinated with those of the Field Operations Coordinator.

The Environmental / Safety Advisor is also knowledgeable in ways and means to temporarily store and ultimately dispose of the recovered oil. He or she will advise on the most cost effective and, in coordination with the Law Department, legal ways to hold large quantities of recovered oil and debris while awaiting its proper disposal. This individual will also determine the best way to dispose of the recovered oil (e.g., incineration, burial, recycling, etc.).

The Environmental / Safety Advisor should be well-versed in safe operation practices and have a basic knowledge of first aid. He or she will identify potential safety problems at the spill site and communicate this information to the field forces. All first aid and medical treatment operations come under his or her jurisdiction.

Scope of Responsibility

The Environmental/Safety Advisor is responsible for continuously assessing damage and potential damage to the environment and reporting to the local OSC. In addition, he or she is:

- ◆ Responsible for providing expertise as to the optimum methodology for the containment and recovery of oil for the conditions that exist.
- ◆ Responsible for providing expertise in disposing of recovered oil and oiled debris in a safe and efficient manner acceptable to local authorities.
- ◆ Responsible for providing expertise on the safe practices to be followed in all operations for the oil spill cleanup.
- ◆ Responsible for maximizing protection of sensitive habitats and wildlife protection/rehabilitation efforts.

Start Up

- ◆ At the incident location, prepare input to and attend the local OSC's strategy and start-up planning meeting.
- ◆ Evaluate the situation at the spill site; assess damage and potential damage to environment.
- ◆ Apply for any manpower or specialist resources needed to conduct monitoring/investigation work.
- ◆ Coordinate the efforts for rescuing oiled wildlife.
- ◆ Work with fish and game agencies to identify wildlife habitats and seasons with high population densities.
- ◆ Recommend wildlife habitats for protection.
- ◆ Invoke existing contractor to handle potentially dangerous wildlife.
- ◆ Contract with wildlife specialists for bird rescue and protection.
- ◆ Identify local facilities for wildlife rehabilitation.
- ◆ Request company funding to lease rehabilitation facilities.
- ◆ Request zoos to provide homes for recovering animals.
- ◆ Set up facilities for collecting and disposing of animal carcasses.
- ◆ Arrange for environmental specialists to collect data and identify impact to:
 - Water and air quality.
 - Human health.

- ◆ Assess the impacts of various response techniques on the environment.
- ◆ Meet with the Federal Regional Response Team and environmental agencies to learn their concerns about environmental impacts.
 - Determine which permits are required and prepare and submit applications. Seek waivers as appropriate.
 - Prepare environmental guidelines for the local OSC and contractors.
 - At the incident location prepare input to, and attend the local OSC's strategy and start-up planning meeting.
- ◆ Evaluate the situation at the oil spill site to assess the amount of oil to be removed and methods to be employed for containment and recovery.
- ◆ Consult local, state, and federal requirements for waste storage, transportation, and disposal requirements.
- ◆ Obtain local authority approval for the disposal of recovered oil and oiled debris.
- ◆ Work with Field Operations Coordinator to estimate storage capacity needed for recovered oil and oiled debris.
- ◆ Contact terminals or chemical plants near the spill area to see if they have capacity to temporarily store recovered oil.
- ◆ Identify regional waste disposal facilities and determine procedures for waste acceptance.
- ◆ Determine, with the Field Operations Coordinator, the extent of manpower, equipment, and services necessary to execute plans.
- ◆ Establish contact with local emergency/medical services.
- ◆ Establish first aid posts.
- ◆ Establish instruction and training facilities for contract labor.
- ◆ Coordinate implementation of permit to work system.

Daily

- ◆ Attend the local OSC's planning meeting.
- ◆ Monitor the effects of clean-up operations on the local ecology, and report to the local OSC.
- ◆ Maintain contact with local ecology experts in order to take full account of local factors and to brief them on clean-up strategies.
- ◆ Monitor field-sampling operations.

- ◆ Keep records of number of oiled animals:
 - dead
 - spotted
 - collected
 - rehabilitated and released
- ◆ Provide supervision for wildlife centers set up for the emergency.
- ◆ Record oiled animal sightings on wall map.
- ◆ Update list of environmental and commercial resources impacted and threatened by the spill.
- ◆ Coordinate with all regulatory agencies.
- ◆ Monitor the effectiveness of clean-up operations and equipment employed. Make recommendations as appropriate to the local OSC and Field Operations Coordinator.
- ◆ Assist the Incident Operations Coordinator in agreeing with local authorities that prescribed clean-up standards have been achieved.
- ◆ Monitor recovery and disposal; make recommendations, as appropriate, to the local OSC and Field Operations Coordinator.
- ◆ Supervise activities for recovered oil transportation, storage, and disposal.
- ◆ Monitor recovered oil and waste handling activities to make sure that regulatory requirements are satisfied.
- ◆ Maintain logs to document the following:
 - Quantity and types of equipment deployed for containment and recovery.
 - Quantity and types of material stored.
 - Storage locations for recovered materials.
 - Disposal sites used for recovered materials.
- ◆ Attend the Field Operations Coordinator's planning meeting.
- ◆ Monitor the effectiveness of security, safety, and medical care arrangements and modifies these as necessary.
- ◆ Hold a planning meeting with senior safety personnel.
- ◆ Monitor clean-up operations and advise the Field Operations Coordinator immediately should it be necessary to halt any activity. (The Environmental / Safety Advisor has authority to halt any activities that contravene legal or company requirements.)

- ◆ Examine (or prepare) operating and safety instructions for all equipment and products delivered to site to ensure that instructions are relayed to, and understood by, operators.
- ◆ Monitor the effectiveness of instruction and training facilities implemented.
- ◆ Maintain a log of all of these activities.
- ◆ Check OSHA training certification documents and ensure all personnel involved in spill cleanup has the required HAZWOPER training.

Periodic

- ◆ Conduct aerial surveillance to locate endangered wildlife habitats threatened by spill.
- ◆ Hire consultants to research response and problems for similar emergencies.
- ◆ Provide input that will help the local OSC to establish priorities for shoreline protection.
- ◆ Advise the Field Operations Coordinator of the quantity of recovered oil on hand that can be recycled.
- ◆ Advise the Field Operations Coordinator of the permits needed for waste disposal, storage, or transportation.
- ◆ Investigate, report, and record all accidents.
- ◆ Attend induction/debriefing of contractors.

Stand Down

- ◆ Provide the Support Coordinator, before leaving site, with a copy of any notes or observations, made during the operation, for use at the post-incident stewardship meeting.
- ◆ Maintain awareness of significant developments concerning the environmental impact of oil pollution.
- ◆ Hold and maintain an up-to-date register of national ecological specialists.
- ◆ Stand down equipment/manpower/specialist local services.
- ◆ Issue a final status report.
- ◆ Monitor developments in containment and recovery techniques and equipment.

- ◆ Agree with relevant government/local authorities that acceptable stand down conditions exist on each cleaned up site.
- ◆ Monitor developments in shore clean-up techniques and equipment.
- ◆ Monitor developments in disposal/storage techniques.
- ◆ Maintain an up-to-date record of licensed disposal/storage sites.
- ◆ Maintain an up-to-date list of licensed waste haulers.

Points to Consider

- ◆ The potential for environmental impacts constantly changes as winds shift spill movement.
- ◆ Do not release rehabilitated wildlife to areas that will be impacted by oil slicks.
- ◆ Animals will ingest oil when they preen themselves. This will contribute to high mortality rates.
- ◆ Eagles, bears, and other scavengers will eat oiled animals; therefore, oiled animals should be removed as soon as possible.
- ◆ Shellfish and bottom fish samples may be needed. If oil enters commercial or subsistence areas for these fish, work with regulatory agencies to determine if closure is warranted.
- ◆ Do not bury recovered oil or oil contaminated debris.
- ◆ Environmental permits may be required to burn or incinerate oil-contaminated material.
- ◆ Emulsified oil should be treated with emulsion breakers before storage.
- ◆ Oil contaminated booms and other damaged equipment may require disposal.

3.a.5.4.....Support Coordinator (Terminal Employee)

Scope of Responsibility

The Support Coordinator is responsible for all security matters; for establishing, operating, and maintaining an effective communications network; for locating, purchasing and expediting the materials and services required for the Oil Spill Response Team; and for maintaining a complete and accurate record of all events that occur.

Start Up

- ◆ Convey stocks of security passes to site.
- ◆ Establish access control and arrange for site security
- ◆ Establish access control to base control point/ field control point/ equipment depots/ recovered material collection points.
- ◆ Contact local area telephone company requesting additional telephone lines.
- ◆ Establish communications network.
- ◆ Set up telephone system for Field Command Post.
- ◆ If necessary, arrange for initial catering/janitorial services required with Field Operations Coordinator, and establish availability of such services and hotel accommodations in locality.
- ◆ If necessary, establish ad hoc field food services (sandwiches/drinks from local caterers, etc.)
- ◆ Convey pre-prepared stock of purchase order forms, open order files, and stock cards to support services field control point.
- ◆ Arrange for necessary manpower resources to perform tasks in own area.
- ◆ Process approved requests for materials and services.
- ◆ Set up procedures to authorize and account for expenditures.
- ◆ Process purchase order numbers to authorized contractors, merchants, and vendors.
- ◆ Check time sheets of contractors to verify accuracy.
- ◆ Distribute pre-printed logbooks to team members.
- ◆ Maintain a display of oil spill management data on the walls of the command and/or operations center(s).
- ◆ Assist Local On-Scene Commander as required.
- ◆ Set up historical log to record daily events
- ◆ Set up record keeping system for:
 - ___ Companies and agencies offering assistance.
 - ___ Calls to Local On-Scene Commander.
 - ___ Correspondence

Daily

- ◆ Attend the Local On-Scene Commander's meeting.
- ◆ Hold planning meeting with security personnel.
- ◆ Monitor effectiveness of security plan.
- ◆ Maintain liaison with police.
- ◆ Maintain radio network.
- ◆ Maintain communications network for operation and security.
- ◆ Check:
 - System power source.
 - Tape recorders for conferences.
 - Cameras, films, & video equipment.
 - Battery chargers
- ◆ Receive, verify, and process invoices.
- ◆ Conduct inspections to make sure items received meet specifications for items ordered.
- ◆ Maintain log.
- ◆ Attend Local On-Scene Commander's planning meeting as recording secretary.
- ◆ File all documents.
- ◆ Maintain shift logs which document: (Obtain information from Field Operations Coordinator)
 - Number of pieces and types of equipment deployed.
 - Number of contractor personnel employed
 - Consultants employed.
 - Company personnel on-site.

Periodic

- ◆ Investigate any security incidents.
- ◆ Maintain close liaison with local police.
- ◆ Attend induction/debriefing of contractors.
- ◆ Schedule maintenance for communications network.
- ◆ Provide training for using communication equipment.
- ◆ On continuous basis, process approved applications for materials and services.

- ◆ Keep records of equipment purchased and issued to contractors.
- ◆ Submit daily/weekly report of expenses.
- ◆ Recommend termination for contractors and consultants that are no longer needed.
- ◆ Prepare weekly chronological report for Local On-Scene Commander.
- ◆ Collect log/note books from team members.
- ◆ Collect purchase orders, work orders, and contracts for the Local On-Scene Commander's signature.

Stand Down

- ◆ Maintain a stock of pre-prepared security passes.
- ◆ Develop and maintain a security plan.
- ◆ Recall all equipment and record return.
- ◆ Collect from other team members copies of all notes, logs, and/or observations made during the operation for use at the post-incident stewardship meeting.
- ◆ Prepare full chronological report for Local On-Scene Commander.
- ◆ Stand down equipment, manpower, and local services.
- ◆ On completion of operation, arrange for equipment and materials to be returned to contractors.

Points to Consider

- ◆ Determine the radio frequencies in concert with USCG, EPA, and contractors.
- ◆ Determine communications that will be needed for all groups participating in clean-up operations.
- ◆ Encourage personnel using the communication network to practice proper radio protocol.
- ◆ Review vendors' invoices, as there may be attempts to overcharge for emergency services.
- ◆ Fixed-fee contracts for services and labor are in the Company's best interest.
- ◆ Make sure that the contract scope for materials and services is well defined.
- ◆ Ask vendors for quantity discounts and discounts for prompt payment.
- ◆ Industry oil spill cooperatives require equipment to be returned in good condition. Most equipment exposed to spilled oil is difficult to return to its pre-spill condition; therefore, it may be necessary to purchase and replace equipment borrowed from cooperatives.

- ◆ If the 30-day lease rate for equipment equals 75 percent of the purchase cost of new equipment, it may be better to buy new equipment.
- ◆ Contractors may provide oiled or poor equipment and charge new equipment rates.
- ◆ When possible, purchase materials and supplies from local merchants.
- ◆ Encourage best management practices relating to the purchase or leasing of equipment and manpower.

3.a.5.5Hazardous Waste Contingency Plan Job Descriptions:

- **Terminal Superintendent** - Coordinates storage, inspection, transportation and disposal of hazardous waste related to the operations of the Facility. In the event of a spill, the Qualified Individual shall serve as Incident Commander and Administrator of the Response Plan.
- **Terminal Supervisor** - Coordinates storage, inspection, transportation and disposal of hazardous waste related to the operations of the Facility.
- **Terminal Operator** - Coordinates storage and inspection of hazardous waste containers in the designated waste accumulation area at the Facility.
- **Environmental Coordinator** - Coordinates waste characterization, storage, transportation, and disposal of hazardous waste relating to Facility operations and remediation of groundwater at the Facility.

ANNEX 3b .. COMMAND

3.b.1..... Qualified Individual and Duties

The Qualified Individual (QI) and the AQI (whether Terminal Superintendent, Administrative Assistant or a Terminal Operator) shall have full authority including access to Company funding and contracting authority to implement spill response actions. The QI/AQI shall communicate immediately with the appropriate regulatory personnel, Company personnel and any necessary spill response contractor to ensure a timely and reasonable response to a release. The QI/AQI shall insure that notification of National Response Center, required under regulations implementing CWA Section 311(b) is complete. Arrangements will be made at all times to ensure that either one or the other (QI/AQI) is available on a 24-hour basis and is able to arrive at the Facility in a reasonable amount of time.

Specifically, in the event of a release the QI/AQI shall perform the following sections:

A Qualified Individual is required to:

- A) Be available on a 24-hour basis;
- B) Speak fluent English;
- C) Be located in the United States;
- D) Be familiar with the implementation of the Response Plan;
- E) Be trained in the responsibilities of the qualified individual under the Response Plan;
- F) Be provided a document by the owner/operator designating them as a qualified individual and specifying their full authority to—
 - (1) Activate and engage in contracting with oil spill removal organization(s) and other response related resources identified in the Plan;
 - (2) Act as a liaison with the predesignated Federal On-Scene Coordinator (OSC); and
 - (3) Obligate funds required to carry out response activities.

If the QI is also the IC, vital duties include:

- A) Activate internal alarms and hazard communications systems to notify all Facility personnel,
- B) Notify all response personnel, as needed,
- C) Identify the character, exact source, amount, and extent of the release, as well as the other items needed for notification,
- D) Notify and provide necessary information to the appropriate Federal, State, and local authorities with designated response rolls, including the National Response Center, State Emergency Response Commission, and Local Emergency Planning Committee,
- E) Assess the interaction of the spilled substance with water and or other substances stored at the Facility and notify response personnel at the scene of that assessment,
- F) Assess the possible hazards to human health and the environment due to the release. This assessment must consider both the direct and indirect effects of the release (i.e., the effects of any toxic, irritating, or asphyxiating gases that may be generated, or the effects of any hazardous surface water runoffs from water or chemical agents used to control fire and heat-induced explosions),
- G) Assess and implement prompt removal actions to contain and remove the substance released,
- H) Coordinate rescue and response actions as previously arranged with all response personnel,
- I) Use authority to immediately access Company funding to initiate cleanup activities, and
- J) Direct cleanup activities until properly relieved of the responsibility.

3.b.1.1.... NIMS ICS Command Aspects

The Incident Command System (ICS) is used to manage an emergency incident or a non-emergency incident. It can be used equally well for both small and large situations.

The system has considerable internal flexibility. It can grow or shrink to meet differing needs. This makes it a very good cost-effective and efficient management system. The system can be applied to a wide variety of emergency and non-emergency situations.

The Command Post will be located in the Terminal Office Building, if possible. The first alternate Command Post will be one of the warehouses located on the Facility property.

3.b.2..... Internal and External Communications

Internal Communications

In the event of a spill, field personnel will immediately notify the Qualified Individual (QI) or the Alternate Qualified Individual (AQI) verbally or via two-way radio. All of the field personnel have two-way radios and QI/AQI has access to a radio at the Facility. The QI/AQI will immediately activate the emergency shut off switch and activate the exit gate to open. The emergency shut off will shut down all the pumps in the Facility including the loading rack pumps. The QI/AQI will inform all personnel via telephone or verbally of the emergency and why evacuation is necessary. If necessary the QI/AQI will assign someone to guard the gate area.

After the employees are told of the emergency and if evacuation is necessary, they should proceed to the gates of escape via evacuation routes (Figure 1.2) and wait for further instructions. In case of a power failure, the pumps will automatically be shut down and the entrance and exit gates can be opened by removing the motor box cover and releasing the clutch at which time the gates can be opened manually.

- For minor emergency evacuation, employees should walk to the reassembly area at the entrance on Paidge Avenue and await further instructions.
- If a Facility evacuation is called for, an alternative command post will be set up at the Long Island Sales Terminal.
- Area and Community Evacuation Plans have been discussed in Core Plan, Section 1.1.6.

If tanks or tank trucks of gasoline or diesel are involved in a fire, isolate for at least one half mile in all directions.

Procedures to account for employees (roll call):

- Employees must stay together on any evacuation.
- Employees are not to leave an evacuation point until their supervisor has accounted for them.

External Communication

For public notification and evacuation, the Facility could obtain the assistance of the Police, the Fire Department and the LEPC. Community evacuation may be facilitated by the use of emergency sirens, media broadcast, PA systems, bullhorns and/or door-to-door notification by police, fire departments and other city employees.

Motiva Enterprises LLC's goal is to keep the public informed in the event of an emergency involving the safety of individuals and/or property. In the event of such an emergency, the Senior Company Official present shall designate a qualified person to handle inquiries from the press. The person so designated, hereafter called "Media Contact", shall gather facts available, including what happen, when, where and the current situation.

In replying to initial questions from the media, the Media Contact should say that the Company would issue a statement as soon as the facts can be obtained.

The Media Contact will immediately notify the nearest Motiva Enterprises LLC Communications Representative of the emergency. The Communications Representative will then take over and prepare all press releases and coordinate community and employee family needs. He or She will handle all public affairs matters with the Incident Commander.

3.b.3..... Safety

The safety of all responders is the most important object in the incident command system. Motiva Enterprises LLC Safety Coordinator will work closely with all other safety officers to ensure that proper procedures are followed. During the "clean-up" phase of the response, Motiva Enterprises LLC's permit program will be followed.

Company Personnel

Workers who have received "First Responder Operations Level" training as outlined by OSHA 29 CFR 1910.120(q)(6)(ii) may respond for the purpose of protecting nearby persons, property or the environment from the effects of the release. Their only response shall be defensive in nature without actually trying to approach the point of release to stop it. Their function shall be to contain the release from a safe distance, keep it from spreading, and prevent exposures. They shall not engage in any activity that would present an actual or potential inhalation hazard from the spilled material, which would require the use of respiratory protection.

Contractor Personnel

The spill contractor will furnish a **Site Specific Safety and Health Plan** before engaging in a clean-up operation. This document shall be on all hazardous waste site jobs. It must be kept up-to-date and be present for review by employees, contractors, subcontractors, federal, state and local authorities. Pre-entry briefings should be held prior to initiating any site activity and the Site Safety and Health Plan reviewed.

The Safety Officer will be responsible for the following:

- **All responders and contractors have credentials demonstrating appropriate OSHA HAZWOPER training.**
- **A safe perimeter is maintained throughout the response. This will include inspection of air monitoring equipment.**
- **All ignition sources have been identified and neutralized.**
- **A Site Safety and Health Plan is in effect for the entire operation.**
- **That proper PPE is being used as identified in the Site Safety and Health Plan.**
- **Decontamination is being conducted by all responders.**

3.b.4..... Liaison

An incident at the Facility will activate the notification process. The Local Response Team will work closely with the local agencies and the emergency management utilizing the Incident Command System.

If the response exceeds the capability of the local response team, the Qualified Individual will request the assistance of the Emergency Management, Preparedness, and Response Regional Team.

ANNEX 3c... ICS OPERATIONS

3.c.1..... OPERATIONAL RESPONSE OBJECTIVES

Motiva Enterprises LLC will operate its Facility and implement this Plan to be protective of human health and the environment.

In general, the Qualified Individual will take the following actions:

- ◆ Investigate any and all reports of leaks or spills to determine what actions need to be taken and what actions can be taken immediately to mitigate the leaks.
- ◆ In the event of a major spill, determine whether or not the spill can be stopped, halted, or contained by simple immediate actions that can be performed with safety.
- ◆ Close the Facility for the duration of the emergency. If required, or if fire or explosion potential is high, contact the local law enforcement and the state police to evacuate the area and to block off the potentially affected highways. The approved Local Emergency Planning Committee evacuation plan will be followed as it pertains to evacuations.
- ◆ Notify the appropriate emergency response agencies and activate the Spill Response Plan.
- ◆ Contact the contractors listed in Core Plan 1.1.2 for immediate assistance on spill response and supplies.
- ◆ The personnel identified in Annex 3.A will be involved in directing the activities of the spill response team and contractors for the site.
- ◆ Begin activities to recover spilled material.
- ◆ Determine a location on the site that can be used to stage equipment and a second location on the site where contaminated soil can be stored safely. If large volumes of contaminated soil are anticipated, the preferred method of decontamination of the soil is by on-site incineration. An off-site staging area for the incinerator may have to be developed to maintain a low fire hazard.

3.c.2..... DISCHARGE CONTROL & ASSESSMENT / MONITORING

The response actions to a spill are dependent on the magnitude of the spill. The necessary equipment, products, and personnel for spill response vary depending on the quantity of the discharge. This section describes general guidance for handling spills as well as specific plans for dealing with small, medium, and worst-case discharge scenarios. The following general guidance must be observed by all persons working with spilled materials.

3.c.2.1 Diesel Fuel Spills

The fire danger from diesel fuels is moderate. Diesel fuels float on water and caution should be used in working with or near the fuels because of their flammability and vapors. Exposure to or inhalation of diesel fuels can be hazardous to health. **The preferred response for cleanup of diesel fuels is containment of the fuels and recovery.** However, extreme caution should be exercised in order to assure that the area is safe and free of explosive vapors **prior** to commencement of containment and recovery activities. Sensitive environmental areas should be protected immediately by use of floating booms to ensure that diesel fuels do not intrude into those areas.

NOTE: Personnel safety is the primary consideration in any emergency. Avoid excessive exposure to liquid and vapors. These procedures are considerations only. Actual circumstances may dictate that procedures followed may differ somewhat from those listed below.

- ◆ Identify the source and stop discharge if possible.
- ◆ Use an explosimeter and other air sampling equipment to assure areas are safe to enter for continued response operations.
- ◆ If the spill occurs in the tank farm, every effort must be made to block any drainage to ditches in order to prevent product from reaching the waterway.
- ◆ Contain and isolate the spill. Monitor containment for effectiveness.
- ◆ Advise neighboring operations of any threat to their property or personnel.
- ◆ Determine the direction and expected duration of spill movement.

- ◆ If the spill enters the waterway, review the location of any environmentally sensitive areas identified in Annex 1. Determine which of these may be threatened by the spill and direct the Oil Spill Cleanup Contractor (COOP), if applicable, to proceed with boom and skimmers to these locations. Take appropriate actions as indicated on the response maps and initiate recovery actions.

3.c.2.2.... Gasoline Spills

The presence of gasoline poses extremely high potential for explosion and fire. Gasoline floats on water and gasoline vapors can travel substantial distances and generate explosions. Exposure to gasoline or its vapors can cause a narcotic effect and can pose a severe health hazard. **In the event of a gasoline spill, the preferred remediation strategy is to knock down or disperse the vapors and allow the product to evaporate until the fire hazard has passed.** Gasoline vapors are heavier than air and will settle in low places. Also, gasoline vapors may travel long distances due to wind action.

Environmentally sensitive areas should be protected by temporary dikes or diversionary booms. The areas near the vapor cloud must be evacuated if the danger of fire or explosion is to be minimized.

NOTE: Personnel safety is the primary consideration in any emergency. Avoid excessive exposure to liquid and vapors. These procedures are considerations only. Actual circumstances may dictate that procedures followed may differ somewhat from those listed below.

- ◆ Identify the source and stop discharge if possible.
- ◆ Use explosimeter and other air sampling equipment to assure that areas are safe to enter for continued response operations.
- ◆ Eliminate sources of vapor cloud ignition. Use waterfog to knock down vapors and disperse material.
- ◆ Stay upwind and evacuate nonessential personnel.
- ◆ Advise neighboring operations of any threat to their property or personnel.
- ◆ Determine the direction and expected duration of spill movement.
- ◆ If the spill enters the waterway, review the location of any environmentally sensitive areas identified in Annex 1. Determine which of these may be threatened by the spill and direct the COOP (if applicable) to proceed to those areas with boom to divert any remaining spilled product.

3.c.2.3.... Ethanol Spill

Many of the procedures set out for Diesel and Gasoline spills should be used during an Ethanol incident. Personnel safety is the primary consideration in any emergency. Avoid excessive exposure to liquid and vapors.

In case of an Ethanol fire:

- ◆ Use Alcohol Resistant (AR) foams for incidents since Ethanol will absorb and break down other firefighting foams rendering them ineffective and it takes copious amounts of water to extinguish an Ethanol fire.

For Ethanol leaks or spills:

- ◆ The absorbent material used should be resistant to alcohol.
- ◆ Initiate proper air monitoring equipment (i.e., Combustible Gas Indicator (CGI) and Flame Ionizing Detector (FID) or MultiRAE Plus Five-Gas Air Monitoring Instrument; Photo Ionizing Detector (PID). Must review response factors prior to using PID, and establish hot, warm and cold zones.
- ◆ Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- ◆ Use clean non-sparking tools to collect absorbed material.
- ◆ Take necessary firefighting response actions ensuring minimal PPE is worn.

3.c.3..... CONTAINMENT AND DRAINAGE PLANNING

Drainage from the aboveground diked storage area is pumped out over the concrete dike walls in accordance with NYFD requirements. Air pumps (200 gpm capacity) equipped with hard pipe suction and discharge are pumped to the rack separator then to the final separator prior to discharge through Outfall 001.

The final separator is a "French weir type" that utilizes flow-through processing before discharging to Outfall 001. The separator is equipped with a mechanical shut-off valve inside the separator between the oil compartment and the water/oil mixture section that will be closed when the oil compartment is full. This valve prevents flow through until the oil is pumped out of the separator.

The pipeline manifold/receiving and barge unloading area drainage evaporates or percolates into the ground except for the barge hose catch pan that is piped to Tank 48.

The discharge from the paved yard area catch basins, the own consumption fuel area, T/T parking area, warehouse loading platform, garage drains (excluding wash bay), truck pump off arm, and pump out from the VRU goes to the final separator and discharge Outfall 001.

Drainage from the employee parking lot and the drainage from the wash bay drain in the garage is to the City sanitary sewer. Stormwater drainage from other areas of the Facility is not controlled as it is either non-point sources and/or originate off non-spill potential areas.

3.c.4..... RECOVERY

The response contractor will use vac trucks and explosion-proof pumps to recover the spilled material. The Facility storage tanks can be used to store recovered product provided there is adequate ullage. Otherwise, contractors will use temporary storage containers to transport and store recovered material. This subject is covered in further detail in Annex 3.d.5.

3.c.5..... DECONTAMINATION AND MEDICAL TREATMENT

In the event of a response at the Facility, contractors will be used to handle decontamination of equipment and personnel. However, if the normal work clothing of Facility personnel becomes contaminated at the onset of a release, the contaminated personnel should:

- ◆ Remove the contaminated clothing immediately.
- ◆ Shower with soap and water as soon as possible.
- ◆ See a physician as soon as possible, and be sure to provide Material Safety Data Sheets (MSDSs) to anyone treating the affected persons.

All emergency responders exiting the contaminated area must go through a decontamination station in accordance with incident management procedures.

Emergency responders will not take any personal protective equipment (PPE) or other equipment from the site until it has been properly decontaminated. If the equipment cannot be decontaminated, it must stay on site.

The local fire and police departments will coordinate with the local emergency medical service (EMS) to provide emergency medical treatment and transportation.

3.c.6..... SALVAGE

Salvage operations for aboveground tanks will be conducted by qualified contractors hired by Motiva Enterprises LLC. No salvage operations will be conducted if unsafe conditions exist.

ANNEX 3d ...ICS-PLANNING

3.d.1INTIAL TACTICAL DEPLOYMENT STRATEGY

TACTICAL DEPLOYMENT

The release into adjacent waterways could potentially be devastating to both the environment and human interests. The NY/NJ ACP has identified for the region exceptional points of interest, recommended boom strategy and deployment locations. The following locations are deemed **PRIORITY** in the booming strategy:

1. If tide is heading **North East**, use NY/NJ ACP ESM Maps #4 and #3, in that order.
 - a. Map #4 Booming Priority

SENSITIVE AREA MAP #4	
CODE	SENSITIVE AREA NAME
B80	RIVERWALK COVE
M36	SOUTH ST SEAPORT
M37	SKYPORT INC MARINA
P1	*CON-EDISION*
P2	*BROOKLYN UNION GAS*
R6	WALLABOUT BAY (BROOKLYN NAVY YARD)
R91	NEWTOWN CREEK
W1	AMSTAR CORP 2 ND AND KENT ST 15'
W4	CON-EDISON EAST RIVER 25'
W5	CON-EDISON HUDSON AVE 20'
W7	CON-EDISON WATERSIDE 20'
W17	UNITED NATIONS 9'

b. Map #3 Booming Priority

SENSITIVE AREA MAP #3	
CODE	SENSITIVE AREA NAME
A62	*NORTH BROTHER ISLAND*
A68	*SOUTH BROTHER ISLAND*
B76	OAK POINT RAIL SITE
B79	HALLETS COVE
C45	BRONX RIVER
R11	WARDS ISLAND PSYCH HOSPITAL
W2	CON-EDISON ASTORIA 48'
W6	CON-EDISON RAVENWOOD 20'
W9	CON-EDISON 74 TH ST 20'
W11	PASNY ASTORIA STATION 20'
W34	CON-EDISON 60 TH ST 8'

2. If tide is heading **South West**, use NY/NJ ACP ESM Maps #4 and #7, in that order

a. Map #4 Booming Priority

SENSITIVE AREA MAP #4	
CODE	SENSITIVE AREA NAME
B80	RIVERWALK COVE
M36	SOUTH ST SEAPORT
M37	SKYPORT INC MARINA
P1	*CON-EDISON*
P2	*BROOKLYN UNION GAS*
R6	WALLABOUT BAY (BROOKLYN NAVY YARD)
R91	NEWTOWN CREEK
W1	AMSTAR CORP 2 ND AND KENT ST 15'
W4	CON-EDISON EAST RIVER 25'
W5	CON-EDISON HUDSON AVE 20'
W7	CON-EDISON WATERSIDE 20'
W17	UNITED NATIONS 9'

b. Map #7 Booming Priority

SENSITIVE AREA MAP #7	
CODE	SENSITIVE AREA NAME
A72	LIBERTY STATE PARK
B8	LIBERTY ISLAND
B9	MOTBY
B67	ELLIS ISLAND
M4	NORTH COVE YACHT CLUB
M7	LIBERTY HARBOR MARINA
M8	NEWPORT YACHT CLUB
M16	GOVENORS ISLAND INDUSTRIAL YARD
M36	SOUTH ST SEAPORT
P3	*NYNEX TELEPHONE LINES*
P4	*CON-EDISON*
P5	*CON-EDISON*
P6	*CON-EDISON*
P7	*BUCKEYE PIPELINE CO.*
P8	*BROOKLYN UNION GAS*
P9	*TRANSCONTINENTAL GAS*
R2	AMERADA HESS
R3	ST GEORGE FUEL PIER
R6	WALLABOUT BAY (BROOKLYN NAVY YARD)
R7	ATLANTIC BASIN
R8	ERIE BASIN
R9	CON-EDISON NARROWS
R90	GOWANUS CANAL
R92	OWLS HEAD PARK (CONCERT BLOCKS)
W4	CON-EDISON EAST RIVER
W5	CON-EDISON HUDSON AVE 20'
W10	WORLD TRADE CENTER 10'
W15	ONE NEW YORK PLAZA 9'
W16	OLYMPIA & YORK (BATTERY PARK) 20'

Utilization of the above approved tactical plans and the NY/NJ ACP will quickly allow the guidance of OSROs and cleanup efforts.

There is no permanent boom located at the Brooklyn Dock. The OSROs are under contract to provide the needed supplies in the event of an incident.

FIGURE 1 TO TAB A
ACP KEY-NY/NJ HARBOR

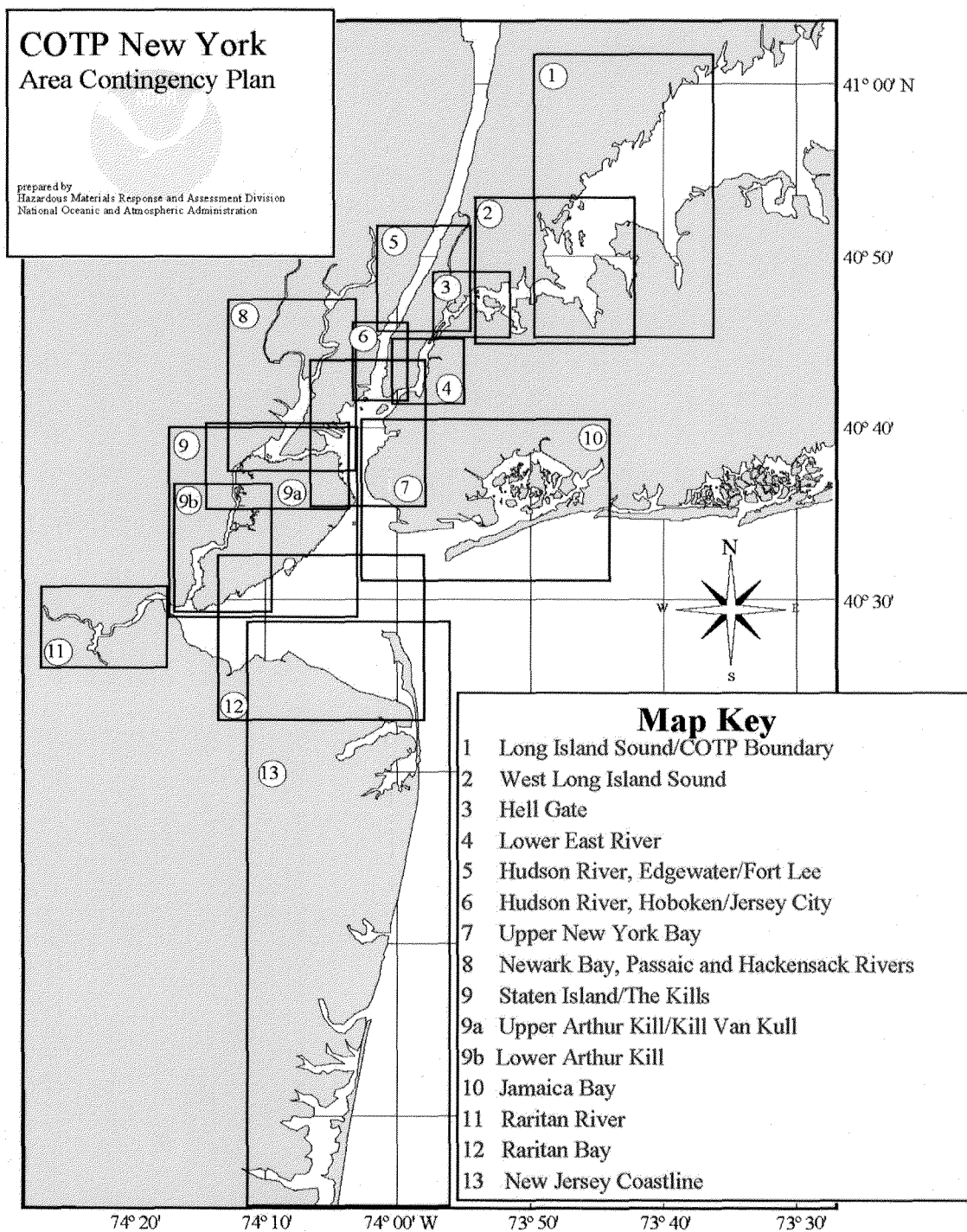
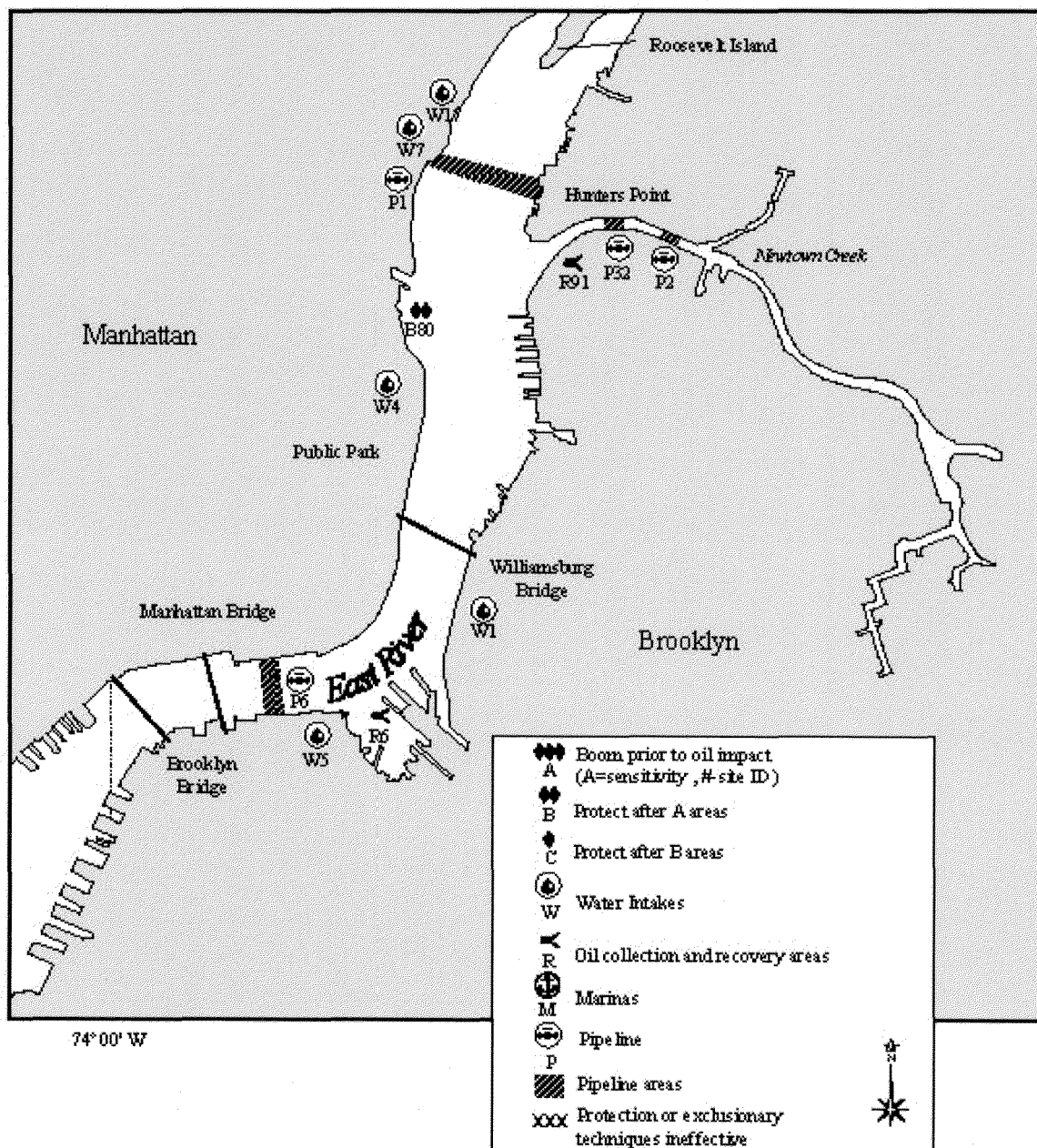


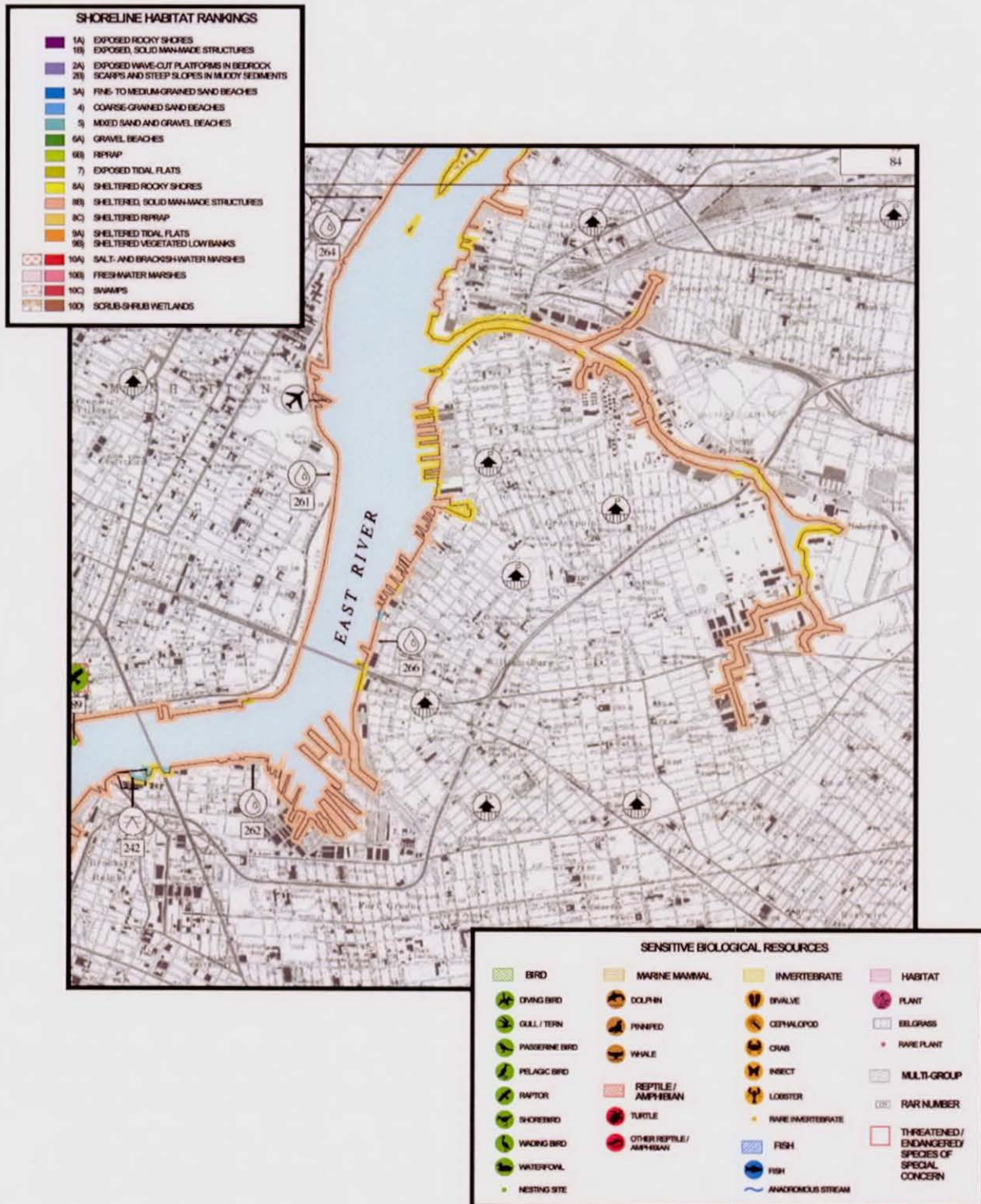
FIGURE 1

MAP 4 TO TAB E
LOWER EAST RIVER



E-V-E
MAP 4

**MAP 4: ENVIRONMENTAL SENSITIVITY INDEX (ESI)
LOWER EAST RIVER**



STRATEGY MATRIX
REV: 20 NOV 98
LOWER EAST RIVER

SENSITIVE AREA MAP 4		BOOM METHOD/ MIN BOOM LENGTH IN FT		STAGING SITE MAP CODE PHONE NUMBER	IMPACT/ ACCESS	
CODE	SENSITIVE AREA NAME					
B80	RIVERWALK COVE	P			E/\$	B/V
M36	SOUTH ST SEAPORT	P/D	3000	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441	\$	B/V
M37	SKYPORT INC MARINA	P/D	300	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441	\$	B/V
P1	*CON-EDISON*	*	*	ELECTRICAL LINES 212-580-6763	\$	B
P2	*BROOKLYN UNION GAS*	*	*	24" GAS LINE 718-403-2921	\$	B
R6	WALLABOUT BAY (BROOKLYN NAVY YARD)	R	1500	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441	E	B/V
R91	NEWTOWN CREEK	P/R	1500	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441	E	B/V
W1	AMSTAR CORP 2 ND AND KENT ST 15'	P/D	1300	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441 N.Y.C. MARINE FIRE DEPT. 718-494-4269	\$	B/V
W4	CON-EDISON EAST RIVER 25'	P/D	1300	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441 N.Y.C. MARINE FIRE DEPT. 718-494-4269	E/\$	B
W5	CON-EDISON HUDSON AVE 20'	P/D	1300	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441	E/\$	B
W7	CON-EDISON WATERSIDE 20'	P/D	1300	SKYPORT INC MARINA (M37) 212-686-4548	E/\$	B
W17	UNITED NATIONS 9'	P/D	1700		E/\$	B/V

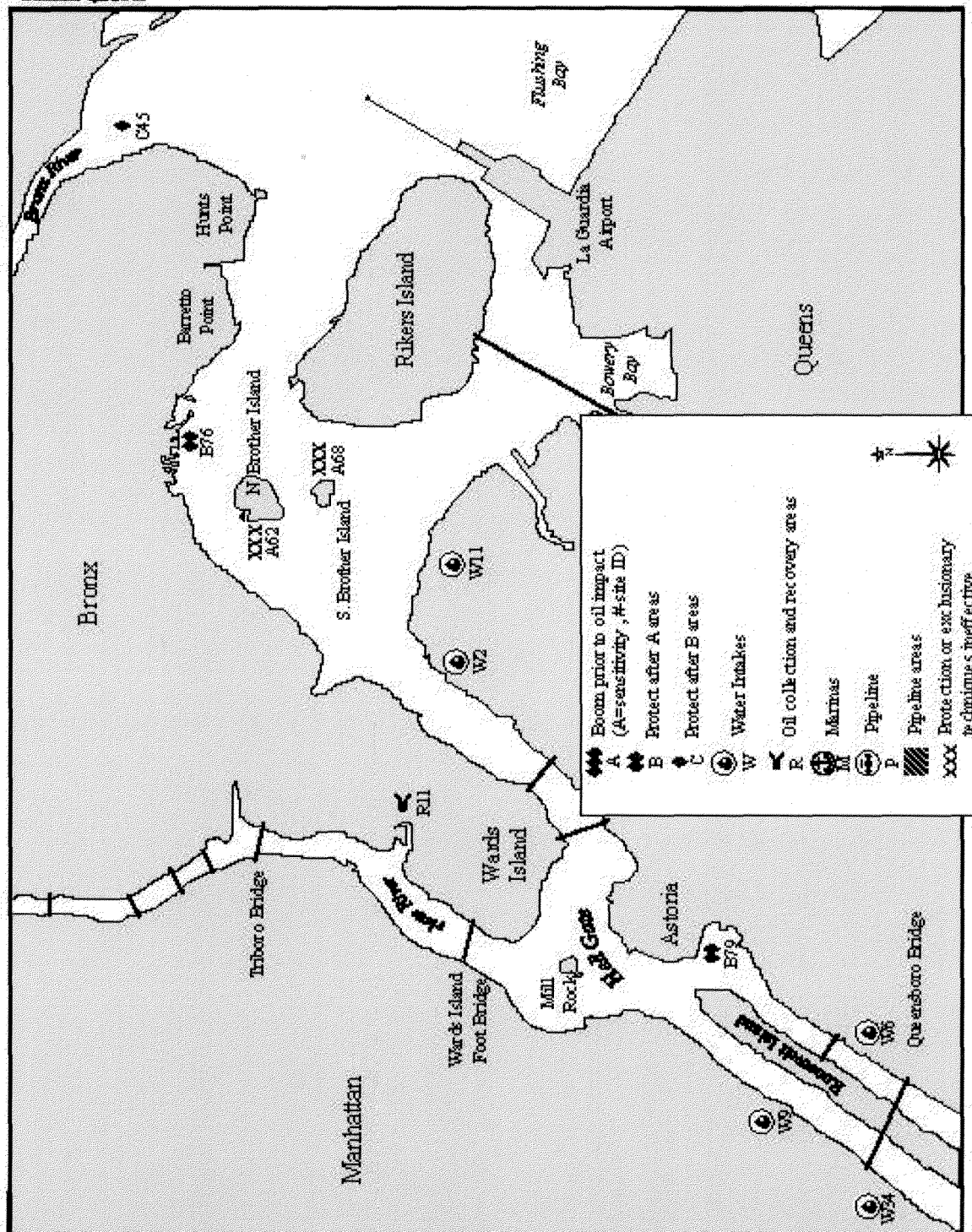
NOTES: WATER INTAKE SIZES ARE LISTED AFTER SENSITIVE AREA NAME

BOOMING METHOD
D = DEFLECT
P = PROTECT
R = RECOVER

IMPACT
E = ENVIRONMENTAL
\$ = ECONOMIC

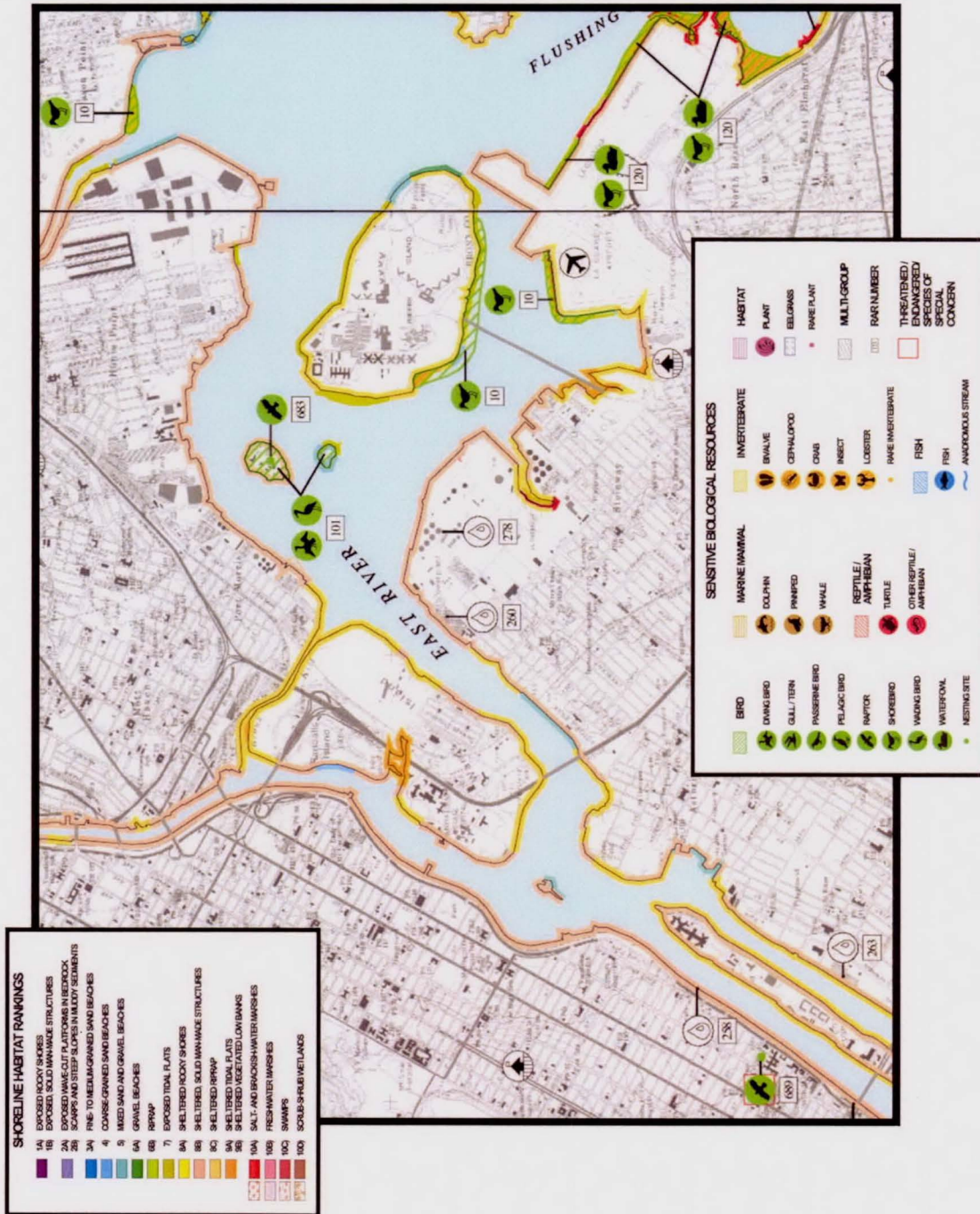
ACCESS
B = BOAT
V = VEHICLE

**MAP 3 TO TAB D
HILL GATE**



**E-V-D
MAP 3**

MAP 3: ENVIRONMENTAL SENSITIVITY INDEX (ESI)
HELL GATE



STRATEGY MATRIX

REV: 20 NOV 98

HELL'S GATE

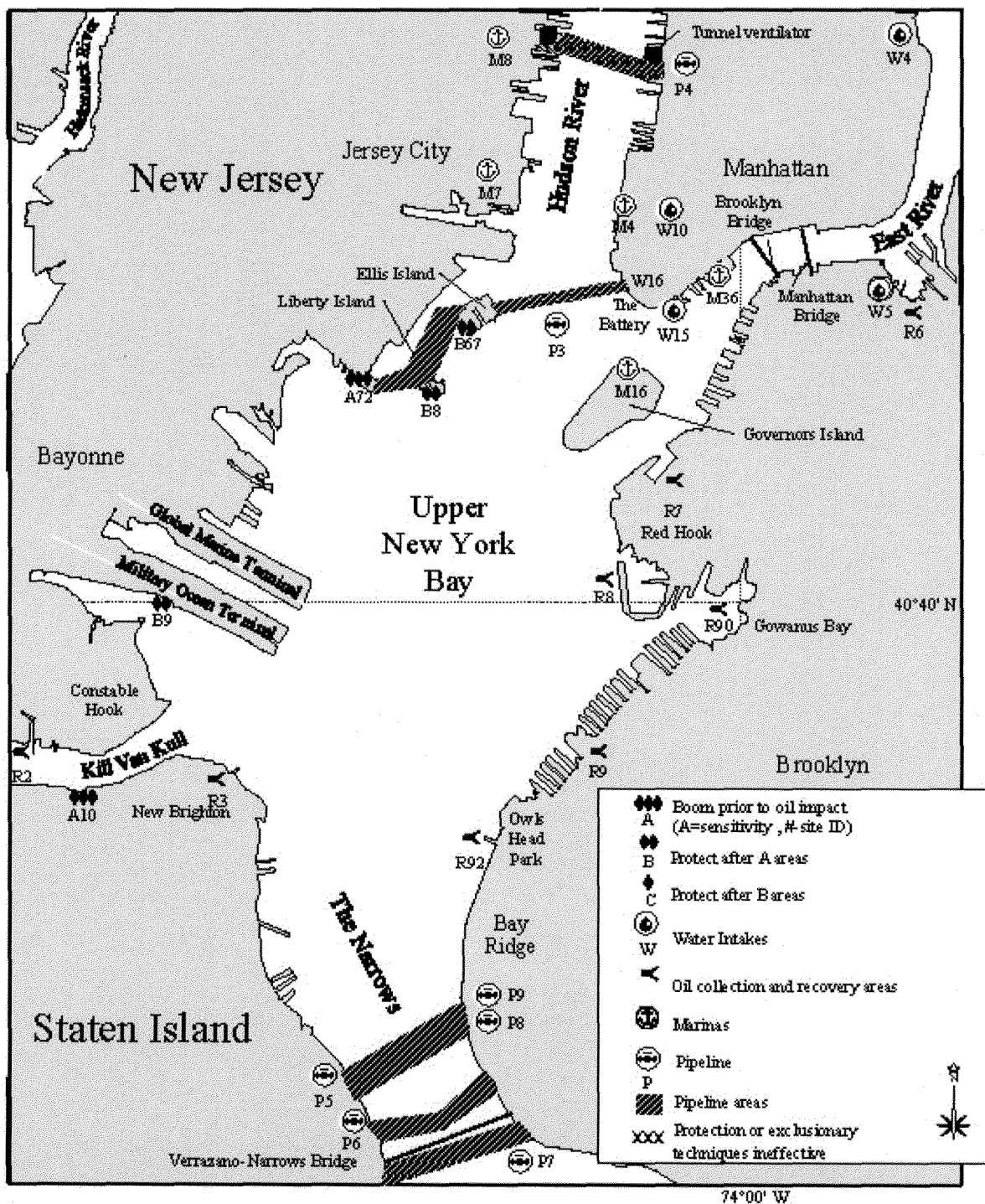
SENSITIVE AREA MAP 3		BOOM METHOD/ MIN BOOM LENGTH IN FT		STAGING SITE MAP CODE PHONE NUMBER		IMPACT/ ACCESS	
CODE	SENSITIVE AREA NAME						
A62	*NORTH BROTHER ISLAND*	P				E	B
A68	*SOUTH BROTHER ISLAND*	P				E	B
B76	OAK POINT RAIL SITE	P/D	500			\$	B/V
B79	HALLET'S COVE	P				E	B
C45	BRONX RIVER	P	700			E	B
R11	WARDS ISLAND PSYCH HOSPITAL	R	1000			E	B/V
W2	CON EDISON ASTORIA 48'	P/D	1300			E/\$	
W6	CON-EDISON RAVENWOOD 20'	P/D	1300	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441		E/\$	B
W9	CON-EDISON 74 TH ST 20'	P/D	1300			E/\$	B/V
W11	PASNY ASTORIA STATION 20'	P/D	1300			E/\$	B/V
W34	CON-EDISON 60 TH ST 8'	P/D	1300	WRIGHT ISLAND MARINA (M17) 914-235-8013		E/\$	B/V
NOTES: *FOR SENSITIVE AREAS A62 AND A68 DEFLECT OR RECOVER OIL BEFORE IMPACT*							
WATER INTAKE SIZES ARE LISTED AFTER SENSITIVE AREA NAME							

BOOMING METHOD
D = DEFLECT
P = PROTECT
R = RECOVER

IMPACT
E = ENVIRONMENTAL
\$ = ECONOMIC

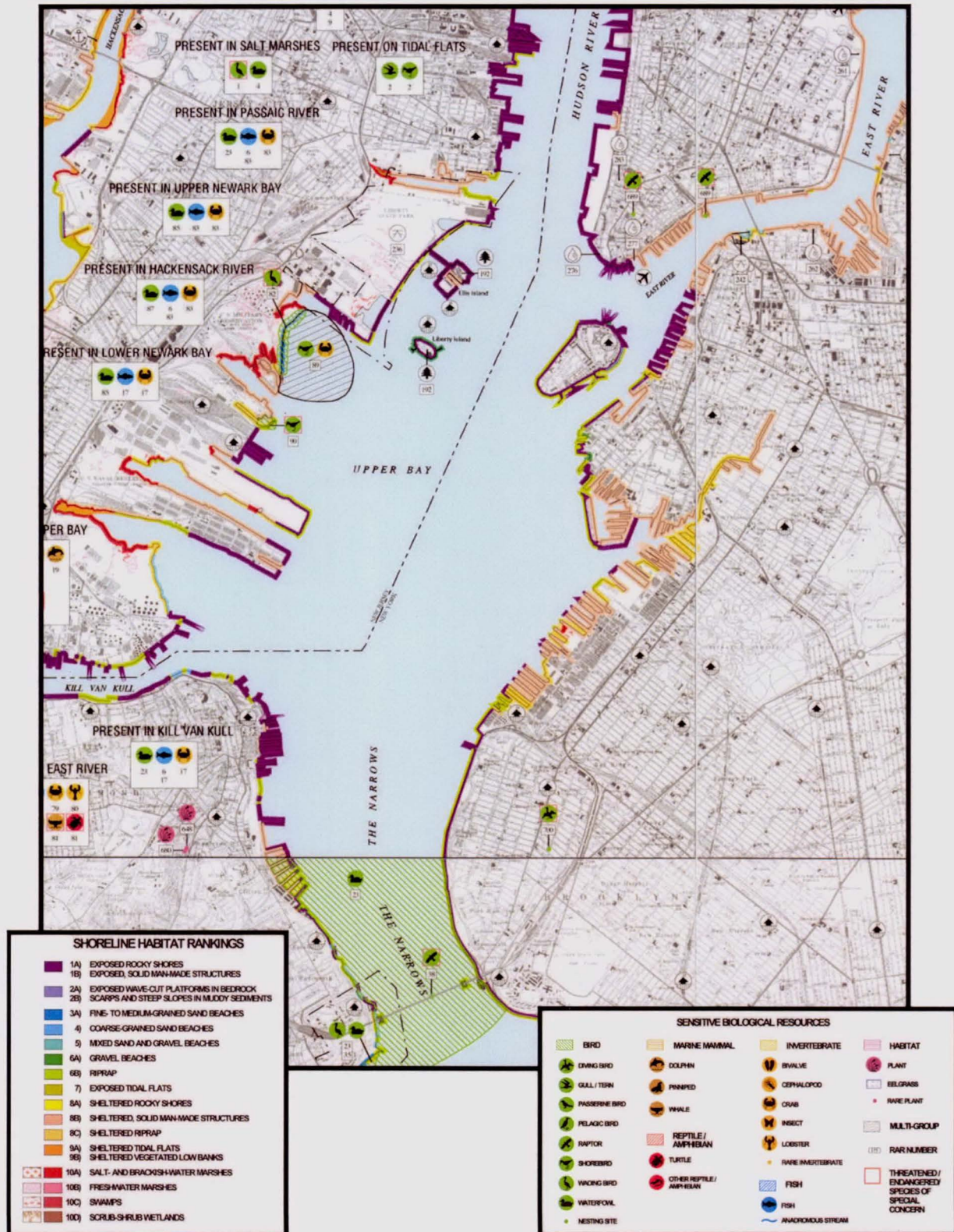
ACCESS
B = BOAT
V = VEHICLE

MAP 7 TO TAB H
UPPER NEW YORK BAY



E-V-H
MAP 7

**MAP 7: ENVIRONMENTAL SENSITIVITY INDEX (ESI)
UPPER NEW YORK BAY**



STRATEGY MATRIX
REV: 20 NOV 98
UPPER NEW YORK BAY

SENSITIVE AREA MAP 7		BOOM METHOD/ MIN BOOM LENGTH IN FT		STAGING SITE MAP CODE PHONE NUMBER	IMPACT/ ACCESS	
CODE	SENSITIVE AREA NAME					
A72	LIBERTY STATE PARK	P/D	3500	LIBERTY STATE PARK (A72) 718-243-0199	E/\$	B/V
B8	LIBERTY ISLAND	P/D	4500	LIBERTY HARBOR MARINA (M45) 201-451-1000 (908-221-1938 NIGHT)	E/\$	B
B9	MOTBY	P/D/R	5000	MOTBY (B9) 201-451-1000 (908-221-1938 NIGHT)	E/\$	B/V
B67	ELLIS ISLAND	P/D/R	6000	LIBERTY HARBOR MARINA (M45) 201-451-1000 (908-221-1938 NIGHT)	E/\$	B
M4	NORTH COVE YACHT CLUB	P	500	NORTH COVE YACHT CLUB (M4) 212-938-9000	\$	B/V
M7	LIBERTY HARBOR MARINA	P/D	300		\$	B/V
M8	NEWPORT YACHT CLUB	P/D	300	NEWPORT YACHT CLUB (M8) 201-626-5550 (718-885-0617 NIGHT)	\$	B/V
M16	GOVENORS ISLAND INDUSTRIAL YARD	P/R	700	GOVENORS ISLAND INDUSTRIAL YARD (M16) 212-668-7936	\$	B/V
M36	SOUTH ST SEAPORT	P/D	3000	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441	\$	B/V
P3	*NYNEX TELEPHONE LINES*	*	*	TELEPHONE LINES	\$	B
P4	*CON-EDISON*	*	*	ELECTRIC POWER LINES 212-580-6763	\$	B
P5	*CON EDISON*	*	*	OIL STATIC LINE 212-580-6763	\$	B
P6	*CON EDISON*	*	*	THREE 24" GAS/ELECTRIC LINES 212-580-6763	\$	B
P7	*BUCKEYE PIPELINE CO.*	*	*	10" GAS LINE 718-656-5746	\$	B
P8	*BROOKLYN UNION GAS*	*	*	TWO 24" GAS LINES 718-403-2921	\$	B
P9	*TRANSCONTINENTAL GAS*	*	*	24" NATURAL GAS LINE 908-862-8600	\$	B
R2	AMERADA HESS	R	900		\$	B/V
R3	ST GEORGE FUEL PIER	R	1000		\$	B
R6	WALLABOUT BAY (BROOKLYN NAVY YARD)	R	1500	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441	E/\$	B/V
R7	ATLANTIC BASIN	R	1500		E	B
R8	ERIE BASIN	R	300	RED HOOK MARINE TERMINAL 718-875-0777	E	B
R9	CON-EDISON NARROWS	R			\$	B
R90	GOWANUS CANAL	P/R	1800	RED HOOK MARINE TERMINAL 718-875-0777	E	B
R92	OWLS HEAD PARK (CONCERT BLOCKS)	P/R	1000	PIER 69 BROOKLYN	E	B/V
W4	CON-EDISON EAST RIVER	P/D	1300	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441	\$	B/V
W5	CON-EDISON HUDSON AVE 20'	P/D	1300	BROOKLYN NAVY YARD DEVELOPMENT CORP 718-852-1441 N.Y.C. MARINE FIRE DEPT. 718-494-4269	\$	B
W10	WORLD TRADE CENTER 10'	P/D	1300	LIBERTY HARBOR MARINA (M45) 201-451-1000 (908-221-1938 NIGHT)	\$	B
W15	ONE NEW YORK PLAZA 9'	P/D	1300	LIBERTY HARBOR MARINA (M45) 201-451-1000 (908-221-1938 NIGHT)	\$	
W16	OLYMPIA & YORK (BATTERY PARK) 20'	P/D	1300	USCG LICENSING AND EXAMS BRANCH 212-668-4970	\$	B
NOTES: <i>WATER INTAKE SIZES ARE LISTED AFTER SENSITIVE AREA NAME DO NOT ANCHOR AROUND PIPELINE AREAS</i>						

BOOMING METHOD
D = DEFLECT
P = PROTECT
R = RECOVER

IMPACT
E = ENVIRONMENTAL
\$ = ECONOMIC

ACCESS
B = BOAT
V = VEHICLE

3.d.2VULNERABILITY ANALYSIS

EFFECTS ON HUMAN HEALTH AND PUBLIC WELFARE

A release of petroleum products in substantial quantity to the environment from the Motiva Terminal in Brooklyn, NY could pose a threat to human health and public welfare.

The immediate vicinity of the spill site should be evacuated to reduce risk of injury from either overexposure or fire and explosion.

A spill from the largest tank would be a non-persistent oil (Group 1). For non persistent oil discharged into tidal waters, the planning distance is 5 miles from the Facility down current ebb tide and to the point of maximum tidal influence or 5 miles, whichever is less, during flood tide. Any release from the piping at the dock has the potential to directly impact Newtown Creek. Site overflow drainage would most likely gently flow east on the Facility's property. Drainage from the employee parking lot and the wash bay drain in the garage is to the City Sanitary and Sewer System.

Actions to contain a spill affecting Newtown Creek and the East River and to prevent exposure to populated areas should include protection of marinas, local industry and other properties on the waterfront where the public may be at risk.

3.d.2.1Water Intakes

The Facility is located approximately one-half mile to the east of the East River. In the event of a discharge with impact to the river, there are various industrial downstream water intakes that may be potentially impacted. Upon determining that a spill could reach an industrial intake, the Facility should be contacted and boom should be used to protect the intake.

Water Intake	Distance from Facility
Con Edison – Waterside Plant	1.25 mile NW <i>(approximate)</i>
Con Edison – 14 th Street Plant	1.50 mile SW <i>(approximate)</i>
Con Edison – Hudson Ave. Plant	4.00 mile SW <i>(approximate)</i>
Con Edison – Ravenswood Plant	2.25 mile NE <i>(approximate)</i>
Con Edison – 74 th St. Plant	3.00 mile NE <i>(approximate)</i>
Con Edison – Astoria Plant	6.50 mile NE <i>(approximate)</i>
Con Edison – Hell Gate Plant	6.50 mile NE <i>(approximate)</i>

3.d.2.2 Schools

Miscellaneous primary and secondary schools are located within the city limits. The schools are situated in all directions from the Facility. Those in the immediate vicinity include:

School Name	Distance from Facility
St. Theresa's School	1.00 mile NE (<i>approximate</i>)
Public School	1.00 mile NE (<i>approximate</i>)
Queens Vocational High School	1.00 mile NE (<i>approximate</i>)
Aviation High School	1.00 mile NE (<i>approximate</i>)

Any evacuation efforts for these schools will be coordinated with the local emergency assistance agencies (police department, fire department, etc.). Additional detail on the schools within the area of the Facility is included on the maps in Figure 1.1.

3.d.2.3 Medical Facilities

Medical Facility	Distance from Facility
St. John's Hospital	0.75 miles N (<i>approximate</i>)
Greenpoint Hospital	1.10 miles S (<i>approximate</i>)
VA Hospital	1.60 miles W (<i>approximate</i>)

Any evacuation efforts for these schools will be coordinated with the local emergency assistance agencies (police department, fire department, etc.). Additional detail on the medical facilities within the area of the Facility is included on the maps in Figure 1.1.

3.d.2.4 Residential Areas

Residential population begins within a quarter-mile of the Facility and continues outward in all directions. The coverage area of these residential areas is not continuous; rather it is broken up by commercial areas.

Any evacuation efforts for these areas will be coordinated with the local emergency assistance agencies (police department, fire department, etc.). Additional detail on the residential areas within the area of the Facility is included on the maps in Figure 1.1.

3.d.2.5Businesses

The immediate area surrounding the Facility is for the most part commercialized. The listing of businesses in the area is extensive and not included here for update purposes.

Any evacuation efforts for these areas will be coordinated with the local emergency assistance agencies (police department, fire department, etc.). Additional detail on the general layout of businesses within the area of the Facility is included on the maps in Figure 1.1.

3.d.2.6Fish and Wildlife, Wetlands, and other Sensitive Environments

The shoreline and general environment in the area of the Facility is highly commercialized. The wildlife population is limited.

Flora and fauna are always present and are sensitive to the effects of a pollution incident. All environmental areas deserve protection from pollution, but they must be prioritized during a response so as to protect the most sensitive and susceptible areas to pollution.

Marsh and wetland habitats exist in the area of the Facility and are identified on the maps in Annex 1. The size and diversity of the wetland environments vary with season and year.

During a response situation, the USFWS and applicable state agencies should be contacted for information regarding wetlands and other sensitive environments. Upon contact, the agencies will be able to:

- Identify and establish priorities for fish and wildlife, wetlands, and other sensitive environments requiring protection from any direct or indirect effects from a discharge.
- Identify potential environmental effects on fish and wildlife, wetlands, and other sensitive environments resulting from removal actions or countermeasures.

3.d.2.7Lakes and Streams

Newtown Creek and the East River could be impacted. Other lakes, streams, and rivers that may be potentially impacted by a discharge originating at the Facility are identified on the maps in Annex 1.

3.d.2.8 Endangered Flora and Fauna

The endangered flora and fauna that may be potentially impacted by a discharge originating at the Facility are listed below.

These species for Kings County, New York include:

Species	Status
Amaranth, Seabeach	Endangered
Bat, Indiana	Endangered

These species for the State of New York include:

Species	Status
Indiana Bat	Endangered
Karner Blue Butterfly	Endangered
Bald Eagle	Threatened
American Peregrine Falcon	Endangered
Piping Plover	Endangered & Threatened
Chittenango Ovate Amber Snail	Threatened
Roseate Tern	Endangered
Bog Turtle	Threatened
Dwarf Wedgemussel	Endangered

3.d.2.9Recreational Areas

The recreational areas most likely to be potentially impacted by a discharge originating at the Facility include:

Recreational Area	Distance from Facility
St. Gabriels Park	1.50 mile NW (approximate)
Murphy Park	1.50 mile W (approximate)
East River Park	1.75 mile W (approximate)
Queensbridge Park	2.00 mile NE (approximate)
Rainey Park	3.00 mile NE (approximate)
Shulz Park	4.00 mile NE (approximate)
Unnamed Park	4.00 mile NE (approximate)
Lighthouse Park	5.00 mile NE (approximate)
Wards Island Park	5.50 mile NE (approximate)
Astoria Park	5.50 mile NE (approximate)
Jefferson Park	6.00 mile NE (approximate)
Battery Park	6.50 mile SW (approximate)
Liberty State Park	7.50 mile SW (approximate)
Ellis Island	7.50 mile SW (approximate)

Any evacuation efforts for these areas will be coordinated with the local emergency assistance agencies (police department, fire department, etc.). The media could also be used to issue public warnings if appropriate.

3.d.3ANALYSIS OF THE POTENTIAL FOR A SPILL

The potential for a significant spill at the Facility is minimal due to the spill prevention measures that are in place and the operating procedures followed by Facility personnel. The potential for a spill of sufficient magnitude to escape the Facility is very remote due to the spill mitigation measures inherent in the Facility design. To date, there have been no reportable spills at this Facility.

All of the containment areas have sumps that route rainwater and spills should they occur to the separator system on the east side of the Facility. Furthermore, all the containment areas are adequately sized to contain the volume of the largest tanks in each of the areas. Storage tank details, including age, are provided in Annex 7.

Spill prevention measures include a number of discharge detection methods and various inspection procedures described further in Annex 7.

Facility operating procedures are defined in the Plant Procedures Manual. All personnel responsible for Facility operations are qualified. New personnel receive on-the-job training working with experienced operating personnel as well as training in the areas of safety, spill prevention, emergency response, and applicable pollution prevention laws, rules and regulations. They become qualified prior to assuming unsupervised operating responsibilities. The Facility is under continuous operation and is always attended by responsible operators.

Spill mitigation measures include Facility designs intended to direct releases to containment areas where they can be promptly controlled and cleaned up.

In the event that a spill does escape the Facility across and off the boundary lines not adjacent to Newtown Creek (south or west sides), the spill would travel along Paidge Avenue or McGinniss until it reaches a stormwater drain which would act as a conduit to the creek.

The New York City area is not subject to excessive damage from inclement weather such as tornadoes, hurricanes, floods, or tropical storms. The area is subject to snowstorms during the winter months but none have resulted in reportable spills. To date, no reportable spills have occurred at the Facility.

3.d.4RESOURCES REQUIRED FOR SPILL RESPONSE

Resources required for spill response are based on the following calculations of planning volumes.

Non-Marine Transportation Related Portion of the Facility - EPA Final Rule

Worst-Case Discharge

For a Facility adjacent to navigable waters, 100% of the capacity of the largest single aboveground storage tank within a secondary containment area. (100% of 10,714 bbls = 10,714 bbls).

WCD = 10,714 bbls

The Facility shall identify sufficient response resources, by contract or other approved means, to respond to a worst-case discharge to the maximum extent practicable. The response resources shall, as appropriate, include:

- Oil recovery devices with an effective daily recovery capacity equal to the lesser of 50% of the WCD or the response caps. If the daily recovery rate exceeds the applicable contracting caps (see Table) then the Facility must identify additional resources equal to twice the cap or the amount necessary to reach the calculated planning volume.
- Temporary storage capacity equal to twice the daily recovery capacity.
- At least 20% of the on-water response equipment should be capable of operating in water of 6 feet or less depth.
- Containment boom for oil collection and containment and for protection of areas of environmental sensitivity or economic importance.
- Identify resources capable of responding to a shoreline clean-up operation involving the calculated volume of oil and emulsified oil that might impact the affected shoreline.
- Response resources with fire fighting capabilities and an individual assigned to work with the Fire Department.

Remediation and cleanup equipment is available from the cleanup contractors. Storage and recovery for oils for a worst-case spill is also available within the Facility. The cleanup may be enhanced by use of special detergent compounds or bio-enhancement compounds.

Contaminated soils will be removed from the surface of the ground and from the banks of waterways and will be thermally processed to remove contamination.

Medium Discharge

The lesser of 36,000 gallons or 10% of the capacity of the largest aboveground storage tank. ($10,714 * 10\% = 1,071$; $36,000/42 = 857$ bbls)

MD = 857 bbls

- Oil recovery devices with an effective daily recovery capacity equal to 50% of the Medium/Maximum Most Probable Discharge volume must be capable of arriving on scene within 12 hours.
- Sufficient quantity of containment boom must arrive within 12 hours for oil collection and containment and for protection of fish and wildlife and sensitive environments, as appropriate.
- Temporary storage capacity equal to twice the daily recovery capacity must be available.

Remediation equipment is available from the OSROs. In the event of a spill, at least one of the OSROs would respond within one hour. The anticipated response would include trenching and drilling to collect contaminated groundwater. Also, sorbents and vac trucks would be utilized to recover spilled product on the ground.

Small Discharge

A volume less than or equal to 2,100 gallons ($2100/42 = 50$ bbls)

SD = 50 bbls

The Facility shall identify sufficient resources, by contract or other approved means, to respond to a small discharge. The response resources shall, as appropriate, include:

- 1,000' of containment boom and a means of deploying it within one (1) hour of the discovery of a spill.
- Oil recovery devices with an effective daily recovery capacity equal to the amount of oil discharged in a *Small Discharge* or greater which is available at the Facility within two (2) hours of the detection of an oil discharge.

- Oil storage capacity for recovered oily material equivalent to twice the effective daily recovery rate.

Remediation equipment is available from the OSROs. In the event of a spill, at least one of the OSROs would respond within one hour. A small discharge at the loading rack would probably not warrant involvement from OSROs since the spill would be automatically routed to the Facility drainage system.

Planning Volume

Refer to the worksheet at the end of Annex 8 showing calculations used to determine the planning volume and on-water recovery capacity. The worksheet gives Tier 1 (6 hours), Tier 2 (30 hours) and Tier 3 (54 hours) recovery capacities.

To achieve a recovery capacity for **Tier 1** of 321 bbls/day, one weir type skimmer would be required. The nameplate capacity of this skimmer is 285 bbls/hr which equates to 1,368 bbls/day effective daily recovery. To sustain continuous operations, two vac trucks along with the necessary boom should also arrive on site within 6 hours.

The **Tier 2** recovery requirement is 536 bbls/day. This is met with the single skimmer deployed in response to the Tier 1 requirement.

The **Tier 3** recovery requirement is 857 bbls/day. This is met with the single skimmer deployed in response to the Tier 1 requirements. These numbers are to be used for planning response resources.

The above equipment and resources would be supplied by local contractors, co-ops (if any), and the MSRC.

3.d.5SPECIFIC SPILL SCENARIOS

3.d.5.1Factors Affecting Spill Response for Small and Medium Discharge Scenarios

3.d.5.1.1 .Size of Spills

Consideration of the resources planned for spill response is based on the evaluation of a release of 857 Bbls of gasoline to the Newtown Creek. A small **discharge** of 50 bbls, or less will require a similar response for containment but would not require as much recovery and cleanup resources as the 857 bbl spill event. The evaluation of the resources required for an 857 bbl spill event is detailed below.

3.d.5.1.2 ... Proximity to Downgradient Wells, Waterways, and Drinking Water Intakes

No drinking water intakes or water wells are located within the vicinity of the Facility.

3.d.5.1.3 ... Proximity to Fish and Wildlife and Sensitive Environments

There are several sensitive environments and receptors in the immediate area of the Facility (See Figures 1.1 and 1.4). Contamination of sensitive environments is highly unlikely since the capacity of the loading rack sump is designed to contain the capacity of any tank truck that uses the rack.

3.d.5.1.4 ... Likelihood that Spill Will Travel Offsite

In the event that a spill occurred at the rack, it would immediately be routed to an oil/water separator. If containment was breached, overflow drainage would most likely gently flow east on the Facility's property. Drainage from the employee parking lot and the wash bay drain in the garage is to the City Sanitary & Sewer System. Any release from the piping at the dock has the potential to directly impact Newtown Creek.

3.d.5.1.5 ... Location of Material Spilled (Receiving Surface)

Spills in the truck loading rack area could land on the concrete truck loading rack pad. Small discharges in the diked areas of the Facility could land on the gravel/clay dike basins.

3.d.5.1.6 ... Material Discharged

The materials that could be discharged in the event of a spill include any of the materials in the Facility. These materials include fuel oil, gasoline, diesel and additives. The most likely materials that could be discharged is gasoline because it is handled in the greatest volumes.

3.d.5.1.7 ... Weather and Aquatic Conditions

The Brooklyn Terminal is on the coast of New York. Seasonal impediments to cleanup may include occasional winds, hurricanes, and seasonally high rainfall. It is not likely that response actions for a small/medium discharge would be influenced by adverse weather conditions since the loading rack is covered.

3.d.5.1.8 ... Availability of Remediation Equipment

For calculation purposes, 80% of the spilled oil would be lost to the environment due to evaporation, dissolution and natural dispersion in the water, 10 % of the spilled oil would reach shoreline features through movement of the oil on the water, and 20% of the spilled oil would be required to be recovered on the water.

Where possible, skimming locations would operate on a 12 to 24 hours per day basis. For the calculation of oil recovered, only 20% of the rated capacity of the skimmer will be used to allow for inefficiencies in encountering oil at the skimmer, manpower effectiveness, etc.

Equipment and resources would be supplied by local contractors, co-ops (if any), and the MSRC based on conditions during an actual spill response.

3.d.5.1.9 ... Probability of Chain Reaction Failures

There is little or no probability that chain reaction failures could occur. The sump is large enough to contain the entire volume of the largest tanker truck compartment. However, special precautions would have to be taken to avoid accidental sparks from igniting the spilled product.

3.d.5.1.10 . Direction of Spill Pathway

The path of the spill is discussed in the Vulnerability Analysis in Annex 3.d.1. A goal to complete top priority boom sites in the first twelve (12) hours requires the following, both for this particular event and according to the evaluation of the sensitive areas prior to the spill. It is assumed that for a spill of this nature that a request would be made to close the River to general traffic and that it may be approved by the USCG.

3.d.5.2 Factors Affecting Spill Response For Worst-Case Discharge Scenario

Consideration of the resources planned for spill response is based on the earlier evaluation showing a worst-case discharge of 10,714 bbls of gasoline to Newtown Creek. The recovery operations would start by following the above scenario. The evaluation of response resources for the worst-case discharge is discussed above under planning volumes.

3.d.5.2.1 ... Size of Spills

The factors that affect spill response are relatively dependent of the size of a spill. The generation of a worst-case spill at the Facility would shut down the Facility for the duration of the spill event or until it has been determined that there is no danger from fire and explosion.

3.d.5.2.2 ... Proximity to Downgradient Wells

There are no wellhead protection areas in the immediate area of the Facility. Most local residences are believed to be on municipal water.

3.d.5.2.3 ... Proximity to Fish and Wildlife and Sensitive Environments

Sensitive Environments are identified in the maps in Annex 1.

3.d.5.2.4 ... Likelihood that Spill Will Travel Offsite

In the event of a worst-case spill involving the aboveground storage tanks, the spill should be contained inside the dike walls.

3.d.5.2.5 ... Location of Material Spilled (Receiving Surface)

In the event of a worst-case spill, the spill will contaminate the surface of the ground and will run on to concrete and paved surfaces in the area as well as into the soils.

3.d.5.2.6 ... Material Discharged

For the worst-case spill, the material probably will be a non-persistent gasoline. Contamination of the shorelines will be anticipated. Provisions for staging several areas for contaminated soil to be placed will be designated by the QI. Motiva will evaluate all available resources with the Federal On-Scene Commander in the unified command and employ those resources deemed necessary. The Motiva Eastern Regional Response Team will be notified and will be available to provide supplemental resources.

3.d.5.2.7 ... Weather and Aquatic Conditions

Weather and aquatic conditions will be considered regarding the cleanup efforts for the worst-case spill.

3.d.5.2.8 ... Availability of Remediation Equipment

Remediation and cleanup equipment is available from the cleanup contractors. Storage and recovery for oils for a worst-case spill is also available within the Facility. The cleanup may be enhanced by use of special detergent compounds or bio-enhancement compounds. Contaminated soils will be removed from the surface of the ground and from the banks of the rivers and will be thermally processed to remove contamination. The extent of petroleum contamination will be determined by using a photoionization detection meter and by visual inspection.

3.d.5.2.9 ... Probability of Chain Reaction Failures

The probability of a chain reaction failure is considered slight to non-existent. The tanks are not manifolded together.

3.d.5.2.10. Direction of Spill Pathway

This is discussed in Annex 3.d.1. Any release from the piping at the dock has the potential to directly impact Newtown Creek. Site overflow drainage would most likely gently flow east on the Facility's property. Drainage from the employee parking lot and the wash bay drain in the garage is to the City Sanitary & Sewer System.

3.d.6 SPILL MOVEMENT ESTIMATES

Immediate action after a spill can minimize potential impact damage since the spill will move with time and result in contamination of a greater area. Oil moves across the surface of the water as a result of wind and current; therefore, it is important to have knowledge of tides, currents, prevailing winds, and other factors which will permit the prediction of how and where a slick will move.

Trajectory Analysis

Oil slicks move as a result of wind and water currents. It is commonly assumed that oil slicks move with the wind at approximately 3 to 4 percent of the wind velocity. When the wind velocity is low or wind is absent, the slick will tend to move with the current at about the same velocity and in the same direction as the current. When the wind is blowing, the slick will be affected by both water and wind forces. If the wind direction is opposite to the current, the wind can reduce or reverse the water velocity at the surface.

Aerial surveillance provides the most effective means of determining spill size and movement. Frequent helicopter and/or fixed wing aircraft overflights may not, however, be possible or available; in which case, spill movement must be calculated using the available data and surface observations.

Tidal Current Charts / Tables

The National Oceanic & Atmospheric Administration (NOAA) in cooperation with the National Ocean Service (NOS) post tidal current predictions on website (<http://tidesandcurrents.noaa.gov>) for Narrows, New York Harbor. Sensitivity should be given to the fact that these charts are estimates and will vary. Currents will also fluctuate due to rainfall in the area.

3.d.7 DISPOSAL PLANS/HAZARDOUS WASTE

For proper disposal of waste, please contact your Field Environmental Representative or your Waste Disposal Coordinator for guidance.

3.d.7.1 General Description of Disposal Plans

The principal items that will be recovered are contaminated soil and contaminated water and oils mixtures. It is not anticipated that the Facility will be able to recover gasoline unless the gasoline stays within the diked areas of the Facility and unless it is of sufficient depth to permit recovery by pumping into a tank or truck trailer.

3.d.7.1.1 ... Recovery of Spilled Materials

All liquids recovered from spills will be assumed to be hazardous wastes, subject to RCRA storage standards. These materials will generally be in the form of recovered liquids pumped from the oil-water separators, slop tanks, or from skimmers. These materials will be handled by various recovery and disposal contractors and will be manifested to licensed hazardous wastes treatment storage and disposal facilities (TSDF) for disposal.

3.d.7.1.2 ... Disposal of Spill Contaminated Materials

All solid cleanup materials that have been in contact with gasoline, diesel fuels, or other products will be placed into a 55-gallon drum or other suitable metal container and appropriately labeled as hazardous wastes until the materials have been analyzed.

If the analysis indicates that the wastes are non-hazardous, the hazardous waste labels will be removed.

If the material is determined by analysis to be hazardous waste, the container of spill-contaminated solids will be manifested as either a D001 (flammable hazardous waste) or as a D018 (hazardous waste containing benzene), depending upon the amount of flammable material in the cleanup materials. These materials will be manifested, stored and disposed of as hazardous wastes.

All soils contaminated with oils and gasolines will be handled and stored in accordance with State of New York regulations for petroleum-contaminated soils.

All individuals responsible for generating any spill control materials shall contact the Environmental Supervisor at the Facility, the Terminal Superintendent, or the Complex Manager for instructions on the placement, labeling, and manifesting for each drum.

3.d.7.1.3 ... Disposal of Contaminated Soils

Contaminated soils will be collected and stored for treatment. Motiva has national contracts with companies that dispose of petroleum-contaminated materials. Contaminated soils will be excavated and moved to a staging area for further evaluation. After determination of the best type of decontamination, the soils will be sent to a soil recycling company for disposal by incineration, thermal processing, or by composting, depending upon state regulations.

3.d.7.1.4 ... Disposal of Contaminated Equipment and Materials

In the event of a petroleum spill, some of the cleanup equipment will be contaminated with gasoline or diesel fuel. Both can be removed from most equipment, except porous surfaces such as wood, by washing with detergent, soap, and water. Most contaminated equipment will be moved to a spill recovery staging area at a location selected by the OSC and washed. The wash waters and rinse waters will be collected for treatment and/or disposal.

3.d.7.1.5 ... Disposal of Contaminated Personal Protective Equipment

Personal protective equipment that may be used on this project may include splash suits and disposable Tyvek® suits. If these materials become contaminated and cannot be cleaned up by washing, they will be drummed and sent off for incineration disposal to one of the approved disposal sites.

3.d.7.1.6 ... Disposal of Contaminated Decontamination Solutions

Decontamination solutions will be treated in one of several ways. With the approval, the solutions could be sent to the wastewater treatment system for disposal. If not, the wastewaters will be pumped through activated carbon to remove the petroleum products. If the water meets the NPDES permit limits, it will be discharged. Otherwise, alternative disposal arrangements will be made.

3.d.7.1.7 ... Disposal of Contaminated Adsorbents Solutions

It is not envisioned that any adsorbent solutions would be used on a spill at this Facility. If any adsorbent solutions are used, they will be recovered and drummed and disposed of as a D001 or D018 hazardous wastes.

3.d.7.1.8 ... Disposal of Contaminated Spent Chemical Solutions

A number of various types of chemical solutions may be used on this project but the specifics are unknown at this time. The principal use of these chemical solutions would be to remove petroleum from the cleanup and recovery equipment.

If these types of solutions are used, they will drummed, analyzed after collection, and disposed of in accordance with appropriate hazardous or non-hazardous waste regulations.

3.d.7.2 Manifesting Shipments of Hazardous Wastes

All waste materials from cleanups are assumed to be hazardous wastes unless testing of the materials indicates otherwise. All materials from cleanups will be manifested to a licensed hazardous waste disposal transporter and disposed at a licensed hazardous waste disposal facility.

3.d.7.3 Locations of Companies Accepting Spill Contaminated Materials

Motiva has national contracts for waste disposal with companies that dispose of petroleum in incineration facilities.

3.d.8 COORDINATION WITH NATURAL RESOURCE TRUSTEES

Motiva will conduct bilateral natural resource damage assessments (NRDA) with the state. Motiva Enterprises LLC will provide a qualified contract toxicologist and expert in NRDA investigations (see contractor list in the Core Plan.)

ANNEX 3e... ICS-LOGISTICS

3.e.1..... MEDICAL NEEDS OF RESPONDERS

The contractor will supply a Site Safety and Health Plan before work begins.

Any personnel requiring emergency medical attention will be evacuated immediately from the spill area. Qualified personnel only will give first aid and stabilize individual needing assistance. To provide first-line assistance to field personnel in case of illness or injury, the following items will be made immediately available by contractor:

First-aid Kit

Portable Emergency Eye Wash

Supply of Clean Water

If actual or suspected serious injury occurs, these steps will be followed:

Remove the exposed or injured person from immediate danger.

Render first aid, if necessary; decontaminate affected personnel after critical first aid is given.

Obtain paramedic services or transport by air or ground ambulance to hospital (listed in Core Plan 1.1.2).

3.e.2..... SITE SECURITY

3.e.2.1.... Fencing

The Facility is surrounded by a chain-link fence. The Facility gates are closed at all times except when traffic requires entry or exit. Access is by loading card or access card.

Trucks may be loaded at the truck loading rack 24 hours per day, 7 days per week. Because of this continuous activity, the Facility has implemented a system of security that permits access only to authorized drivers and trucks.

3.e.2.2.... Locked Valves

Valve security at the Facility is maintained in several ways. Inactive valves are chained or locked in the closed position.

3.e.2.2.... Locked Valves (Cont'd)

In the tank farm area, all tank water withdrawal valves are locked and closed when not in use. All basin drain valves, where installed, are closed, chained, and locked when not in use. When the basin drain valves are operated, the water in the basin is inspected by an employee prior to operation of the valve. If a visible sheen or other condition indicating the presence of oil or gasoline is present, the valves are not operated.

3.e.2.3.... Pump Controls

Deliveries from the product storage tanks to trucks are controlled by the Terminal Automation System. The drivers can only gain access to the Facility by inserting a pre-coded card. Once inside the Facility, the driver cannot turn on the product pumps to load the vehicle unless the card is inserted into the loading rack card reader. Only approved drivers are assigned the pre-coded cards.

3.e.2.4.... Capping and Blanking Valves

All loading connections that are not in use are capped, blind flanged, or otherwise secured to prevent an oil leakage.

3.e.2.5.... Facility Lighting

The Facility has security lighting at the loading rack and the storage tank area. These lights provide illumination that is sufficient to detect any acts of vandalism, discharges, or releases. The lights are turned on automatically.

3.e.2.6.... Security Guards - Site Control

Site security and access will be the responsibility of the Complex Manager. During an emergency, access will be limited to those persons who are authorized and have proper training. This responsibility will be delegated to the local law enforcement agency or contract security identified in Core Plan, Section 1.1.2.

3.e.3..... COMMUNICATIONS

The Facility utilizes intrinsically safe UHF radios that meet Class 1 Division 1, Group D requirements. In the event of a response, the Facility radios will be supplemented by the contractor resources based on the circumstances. ICS 205 form will be used to provide all radio frequency assignments as prepared by the Communications Unit Leader and given to the Planning Section Chief. (A copy of the form is provided at the end of the Annex.) In addition, the Terminal Office has landlines and cellular telephones, fax machines, and computers to contact personnel assigned to the incident.

3.e.4..... TRANSPORTATION

Tank trucks and helicopters are available through the list of contractors provided in the Core Plan, Section 1.1.2.

3.e.5..... PERSONNEL SUPPORT

Meals and housing can be provided by area hotels listed in Core Plan, Section 1.1.6.1.

3.e.6..... EQUIPMENT MAINTENANCE AND SUPPORT

Contractors will be relied upon for equipment maintenance and support.

1. Incident Name		2. Operational Period (Date / Time) From: To:		INCIDENT RADIO COMMUNICATIONS PLAN ICS 205-CG	
3. BASIC RADIO CHANNEL USE					
SYSTEM / CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS
4. Prepared by: (Communications Unit)				Date / Time	
INCIDENT RADIO COMMUNICATIONS PLAN				ICS 205-CG (Rev.07/04)	

ANNEX 3f ... ICS–FINANCE / PROCUREMENT / ADMINISTRATION

3.f.1..... RESOURCE LIST / RESPONSE EQUIPMENT / SUPPORT EQUIPMENT / CONTRACTING

The Facility maintains only minimal quantities of spill response material in the response trailer. The majority of the spill response materials are available from the contractors. Motiva Enterprises LLC has spill response assistance contracts with the contractors shown in Core Plan, Section 1.1 of this Plan. The Emergency Management, Preparedness, and Response Regional Team can provide procurement and manpower coordinators who will obtain materials, equipment, and manpower from contractors. (See organization chart listed in Annex 3.a) Facility personnel are prohibited from responding to spills as they are only trained to the first responders operations level.

Company personnel who have received first responder operations level training [as outlined by OSHA 29 CFR 1910.120(q)(6)(ii)] may respond for the purpose of protecting nearby persons, property, or the environment from the effects of the release. Their only response will be defensive in nature without actually trying to approach the point of release to stop it. Their function will be to contain the release from a safe distance and keep it from spreading. They will not engage in any activity that would present an actual or potential inhalation hazard from the spilled material that would require the use of respiratory protection.

3.f.2..... PERSONNEL MANAGEMENT

When large numbers of workers are needed, the oil spill contractor will supply skilled and unskilled personnel. They will also supply technical people as needed. The Emergency Management, Preparedness, and Response Regional Team can also assign specific duties for team members to carry out when an oil spill occurs.

3.f.3..... CLAIMS PROCEDURES

The Emergency Management, Preparedness, and Response Regional Team can provide claims personnel who will handle the processing of claims on site. The claims coordinator will contact the local media and publish a toll free 800 number for claimants to call. (See organization chart listed in Annex 3.a).

3.f.4..... COST DOCUMENTATION

The Emergency Management, Preparedness, and Response Regional Team will provide a Comptroller and Auditor to control and document costs. (See organization chart listed in Annex 3.a)

ANNEX 4..... INCIDENT DOCUMENTATION

4.1..... POST-ACCIDENT INVESTIGATION

4.1.1..... Purpose of Follow-Up

A critique following an oil spill response is beneficial to evaluate the actions taken or omitted. Recommendations and modifications to the ICP should be made to prepare for the possibility of another oil spill. Requests for a post incident critique will only be made by a Company attorney. It is recommended that all discussions be attended by a Company attorney who should also review all reports prior to finalization.

4.1.2..... Outline of Post-Spill Critique

Outlined below are items a team composed of outside people knowledgeable in oil spill response and key members of the response teams (including a Company attorney) may wish to examine. These questions are intended as guidelines only; many other questions are likely to be appropriate at each stage of a critique.

4.1.2.1....Detection

- ◆ Was the spill detected promptly?
- ◆ How was it detected?
- ◆ By whom?
- ◆ Could it have been detected earlier? How?
- ◆ Are any instruments or procedures available to consider which might aid in spill detection?

4.1.2.2....Notification

- ◆ Were proper procedures followed in notifying government / agencies?
- ◆ Were notifications prompt?
- ◆ Was management notified promptly?
- ◆ Was management response appropriate?
- ◆ Was Motiva Enterprises LLC notified promptly?
- ◆ If so, why, how, and who? If not, why not?

4.1.2.3....Assessment / Evaluation

- ◆ Was the magnitude of the problem assessed correctly at the start?
- ◆ What means were used for this assessment?
- ◆ Are any guides or aids needed to assist spill evaluation?
- ◆ What sources of information were available on winds and on water currents?
- ◆ Is our information adequate?
- ◆ Was this information useful (and used) for spill trajectory forecasts? Were such forecasts realistic?
- ◆ Do we have adequate information on oil properties?
- ◆ Do we need additional information on changes of oil properties with time (i.e., as a result of weathering and other processes)?
- ◆ Could the assessment have been speeded up or should it have been?
- ◆ What about mobilization of manpower resources?
- ◆ Was the local oil spill cooperative used appropriately?
- ◆ How could this be improved?
- ◆ Was it appropriate to mobilize Motiva resources; if so, was the mobilization promptly initiated?
- ◆ What other corporate resources are available and have they been identified and used adequately?

4.1.2.4....Response–Strategy

- ◆ Is there an adequate spill response plan for the location?
- ◆ Is it flexible enough to cope with unexpected spill events?
- ◆ Does the Plan include clear understanding of local environmental sensitivities?
- ◆ What was the initial strategy for response to this spill?
- ◆ Is this strategy defined in the spill plan?
- ◆ How did the strategy evolve and change during this spill and how were these changes implemented?

- ◆ What caused such changes?
- ◆ Are improvements needed? More training?

4.1.2.5....Responses–Resources Used

- ◆ What resources were mobilized?
- ◆ How were they mobilized?
- ◆ How did resource utilization change with time? Why?
- ◆ Were resources used effectively?
 - Contractors
 - Government agencies
 - Company resources
 - Cooperatives
 - Volunteers
 - Consultants
 - Other (e.g., bird rescue centers)
- ◆ What changes would have been useful?
- ◆ Do we have adequate knowledge of resource availability?
- ◆ Do we have adequate knowledge of waste disposal capabilities?

4.1.2.6....Response–Effectiveness

- ◆ Was containment effective and prompt?
- ◆ How could it have been improved?
- ◆ Should the location or the local cooperative have additional resources for containment?
- ◆ Was recovery effective and prompt?
- ◆ How could it have been improved?
- ◆ Should the location or the local cooperative have additional resources for recovery of spilled oil?
- ◆ Was contaminated equipment disposed of promptly and safely?
- ◆ Was there adequate in-house oil separation, recovery, and disposal?

- ◆ How could it have been improved?
- ◆ Were adequate outside disposal resources available?

4.1.2.7....Command Structure

- ◆ Who was initially in charge of spill response?
- ◆ What sort of organization was initially set up?
- ◆ How did this change with time? Why?
- ◆ What changes would have been useful?
- ◆ Was there adequate surveillance?
- ◆ Should there be any changes?
- ◆ Were communications adequate?
- ◆ What improvements are needed (in hardware, procedures, etc.)?
- ◆ Was support from financial services adequate? Prompt?
- ◆ Should there be any changes?
- ◆ Is more planning needed?
- ◆ Should financial procedures be developed to handle such incidents?

4.1.2.8....Measurement

- ◆ Was there adequate measurement or estimation of the volume of oil spilled?
- ◆ Was there adequate measurement or estimation of the volume of oil recovered?
- ◆ Was there adequate measurement or estimation of the volume of oil disposed of?
- ◆ Should better measurement procedures be developed for either phase of operations?
- ◆ If so, what would be appropriate and acceptable?

4.1.2.9....Government Relations

- ◆ What are the roles and effects of the various government agencies that were involved?
- ◆ Was there a single focal point among the government agencies for contact?
- ◆ Should there have been better focus of communications to the agencies?
- ◆ Were government agencies adequately informed at all stages?
- ◆ Were too many agencies involved?
- ◆ Were any changes needed in procedures to manage government relations?
- ◆ Examples of affected U.S. agencies (there may be others):
 - Coast Guard
 - Environmental Protection Agency
 - National Oceanographic Atmospheric Administration
 - Department of Fish and Wildlife
 - State Parks
 - Harbors and Marinas
 - States
 - Cities
 - Counties
- ◆ Was there adequate agreement with the government agencies on disposal methods?
- ◆ Was there adequate agreement with the government agencies on criteria for cleanup?
- ◆ How was this agreement developed?
- ◆ Were we too agreeable with the agencies in accepting their requests for specific action items (e.g., degree of cleanup)?
- ◆ Should there be advance planning of criteria for cleanup aimed at specific local environmentally sensitive areas? (Such criteria should probably also be designed for different types of oils.)

4.1.2.10..Public Relations

- ◆ How were relations with the media handled?
- ◆ What problems were encountered?
- ◆ Are improvements needed?
- ◆ How could public outcry have been reduced? Was it serious?
- ◆ Would it be useful to undertake a public information effort to educate reporters about oil and its effects if spilled?
- ◆ These areas should be investigated shortly after the incident to assure that actions taken are fresh in peoples' minds.

4.2..... FACILITY SPILL HISTORY

This section presents a discussion of spill events that have occurred at the Brooklyn Terminal during the past 5 years as required by the OPA 90 under 40 CFR 112.20. To date, the Facility has not been at fault for any reportable oil spills, as defined in 40 CFR Part 110.

After emergency notifications, all spills that occur at the Facility are reported to the Regional Manager. The EMP&R Notification Log is an environmental incident tracking form and is used to track all spills, releases, and discharges. A formal log of the reportable spill incidents is kept in this manual maintained at the Terminal Office.

This Integrated Contingency Plan is updated as necessary with a copy of pages from the current Spill Control Log. A copy of a typical log page is presented here in Annex 4. Copies of spill records and the remedial actions taken to prevent an occurrence of a spill incident are also maintained in a Spill Control Log, which is kept in the Terminal Office. A copy of the Casualty / Loss Incident reports are also placed in this file after each spill control incident, along with an analysis of the causes of the incident and the preventive measures taken to control it. This file is kept in the Terminal Office and is updated as required.

4.2..... Continued

Elements required on the spill history record.

<i>Date of discharge.</i>	
<i>Location of discharge.</i>	
<i>Discharge cause(s).</i>	
<i>Material(s) discharged.</i>	
<i>Amount discharged.</i>	
<i>Amount of discharge that reached navigable waters.</i>	
<i>Amount recovered.</i>	
<i>Effectiveness and capacity of secondary containment.</i>	
<i>Clean-up actions taken.</i>	
<i>Steps taken to reduce possibility of recurrence.</i>	
<i>Total storage capacity of the tank(s) or impoundment(s) from which the material discharged.</i>	
<i>Enforcement actions.</i>	
<i>Effectiveness of monitoring equipment.</i>	
<i>Description of how spill was detected.</i>	

ANNEX 5..... TRAINING AND EXERCISE DRILLS

5.1..... FACILITY DRILLS AND EXERCISES

Alert drills, as required by the Clean Water Act (CWA) Section 311(j)(5), are part of the response plan and are recorded in the PREP Documentation Log that is kept in the Terminal Office. During the drills, actions taken by the response team, both predicted and unpredicted, are noted and reviewed.

5.1.1..... Description of Exercises and Evaluation Procedures

The Facility follows the National Preparedness for Response Exercise Program (PREP) Guidelines for responding to the evaluation and exercises requirements embodied in the OPA 90 regulations. This Facility uses a combination of both internal and external exercises to comply with the preparedness and training portions of the PREP guidelines. The internal exercises include:

- ◆ QI notification exercises
- ◆ Spill Management Team Tabletop Exercises

Additionally, the Facility conducts area exercises in cooperation with Motiva staff and with the participation of other Industry response teams.

- ◆ The QI Notification Exercises include quarterly notification of the various QIs and AQIs at the terminal.
- ◆ The spill management team tabletop exercises consist of annually conducted spill drills with the local spill management team.
- ◆ The OSRO equipment deployment exercises are conducted by the OSROs under contract by Motiva. These OSROs are asked to provide documentation that they have complied with the annual equipment deployment exercises. Because the Facility personnel are neither permitted nor qualified to provide emergency response activities, all emergency response is performed through OSROs.
- ◆ Within a triennial cycle, the Facility and Motiva conduct the following minimum number of drills:
 - Twelve–QI notification exercises conducted quarterly.
 - Three–spill management team tabletop exercises. One of these involves a worst-case scenario and is conducted annually in conjunction with the local spill management team.

- Three–unannounced exercises conducted annually that are more than QI notifications. These exercises vary in size and scope. Actual response can be considered as an unannounced exercise.
- OSRO–equipment deployment exercises (required of OSROs on an annual basis).
- Company equipment deployment exercises (semiannual). Note: As stated in Core Plan 1.1.4, the Facility does not have response equipment and relies on OSRO contractors. Absorbents, shovels, rakes, gloves, and flash lights are maintained onsite for routine maintenance and housekeeping purposes and not for spill response.

5.1.2..... PREP Guideline Compliance

This Facility is in compliance with the PREP guidelines and exercises. The supporting documentation for the compliance with the PREP guidelines is maintained in the Terminal Office files.

5.1.3..... QI Notification and Spill Management Team Tabletop Drill Exercises

The QI notification exercises are conducted quarterly. The Spill Management Team Exercises are conducted annually. Documentation of the drills is kept in the Terminal Office files.

5.1.4..... QI Notification Drill Logs

The logs of the drills are maintained in the Terminal Office files. The logs are maintained for a period of five (5) years.

5.1.5..... Spill Management Team Tabletop Exercise Logs

Spill Management Team Tabletop Exercise Logs are maintained in the Terminal Office files. The drill logs, that include self-evaluation of the exercise, are available by request of the Complex Manager. The logs are maintained for a period of five (5) years.

Motiva has committed to compliance with training requirements and drill requirements as outlined in the PREP Guidelines.

5.1.6..... Government-Initiated Unannounced Exercises

Government-initiated unannounced exercises are designed to give the agency with primary regulatory oversight over a particular industry the opportunity to evaluate on a random basis, the response preparedness of that industry. Motiva will participate in a government-initiated unannounced exercise as directed.

5.2..... TRAINING AND MEETING LOGS

5.2.1 Personnel Training and Qualifications

The Complex Manager determines the qualifications of various personnel and assignments.

This Section contains a description of the qualifications and the personnel's training that is conducted at the Facility.

5.2.2..... Personnel Qualification and Training

5.2.2.1 Demonstrated Ability Requirements

No person is allowed to operate the storage and handling equipment of this Facility until he / she has read and understands the operating procedures outline in this Plan for that person's scope of activity and has demonstrated ability to operate such equipment in the prescribed manner.

No employee of this Facility is permitted to operate the storage, processing or handling equipment unless that person can demonstrate to the Complex Manager the following:

- ◆ An ability to handle the Facility non-transportation related equipment.
- ◆ Thorough knowledge of the grade and name of all products handled.
- ◆ Knowledge of capacities of all storage tanks and products assigned.
- ◆ Ability to gauge tank level and temperature and convert barrels to gallons.
- ◆ Knowledge of location and operation of all piping and valves.
- ◆ Knowledge of location and operation of all safety equipment.
- ◆ Knowledge of emergency shutdown system.
- ◆ Knowledge of location and operation of communication method with shipping facility.
- ◆ Knowledge of all operation and spill contingency procedures outlined in this Plan.

Special training sessions dedicated to this Plan will be held as deemed necessary for present and future implementation.

5.2.2.2.... Designated Individual Responsible for Training

The Complex Manager is responsible for personnel training. The Complex Manager ensures that no unqualified personnel are permitted to perform work. Additionally, the Complex Manager provides the opportunity for selected individuals to attend specialized training classes on pertinent subjects. Some of these classes may include HAZWOPER and refresher training, and other specialized training.

5.2.2.3.... Training Programs

The Facility personnel are instructed in the operation and maintenance of equipment at the Facility. The instruction includes the prevention of discharges, spills, or releases of oil, applicable pollution control regulations and the contents of the Facility SPCC Plan. No person is allowed to operate equipment or receive products at the Facility until he or she is thoroughly trained and has demonstrated an ability to handle the assignments.

The training received by all personnel including classroom instruction, safety and environmental briefings, on-the-job training with a supervisor, periodic formal reviews of the operating instructions and procedures used at the Facility is maintained as part of their personnel records.

All personnel are instructed when new procedures are introduced or when any procedures are modified. Training and retraining is also performed when new equipment is introduced in the Facility.

In addition to the Facility training, employees have received HAZWOPER training to the level of First Responder- Operations.

5.2.3..... Discharge Prevention Meeting Logs

Motiva conducts periodic safety meetings at this Facility. These meetings include various health and safety matters as well as discussions of spill prevention and cleanup and the importance of employee awareness, visual observation, and prompt response in preventing spills. At least once a year, the safety meetings will highlight and describe known discharges and any recently developed precautionary measures. The minutes of the safety meetings are maintained in the Terminal Office files.

5.2.4..... National Preparedness For Response Exercise Program (PREP)

MOTIVA ENTERPRISES, L. L. C. TRIENNIAL CYCLE OF EXERCISING THE ENTIRE RESPONSE PLAN

Fill in the dates exercises were conducted in the spaces provided below:

QI Notification Exercises¹

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

OSRO Equipment Deployment Exercises

1. _____
2. _____
3. _____

Spill Management Team Table Top Exercises²

1. _____
2. _____
3. _____

Unannounced Exercises

1. _____
2. _____
3. _____

Facility-Owned Equipment Deployment Exercises

1. N/A
2. N/A
3. N/A
4. N/A
5. N/A
6. N/A

NOTES:

¹One of these a year must be conducted during off-duty hours

²One within a three-year cycle must include a Worst-Case Discharge Scenario

Complete documentation of drills or actual emergency responses is located in the Terminal Office PREP Documentation Log.

SAMPLE ONLY

INTERNAL EXERCISE DOCUMENTATION FORM

Quarterly QI Notification Exercise

1. Date performed: _____
2. Exercise or actual response? _____
3. Terminal initiating exercise: _____
4. Name of person notified: _____
Is this person identified in your response plan as qualified individual or designee? _____
5. Time initiated: _____
Time in which QI or designee responded: _____
6. Method used to contact: Telephone_____, Pager_____, Radio_____, Other_____
7. Description of notification procedure: _____

8. Identify which of the 15 core components of your response plan were exercised during this particular exercise: **Notification, Communications, Documentation.**

Certifying Signature

Retain this form for a minimum of five (5) years for EPA or three (3) years for USCG/PHMSA/BOEMRE.

INTERNAL EXERCISE DOCUMENTATION FORM

SPILL MANAGEMENT TEAM TABLETOP EXERCISE AND QI NOTIFICATION DRILL

-
1. Date performed: _____
 2. Exercise or actual response? _____
If an exercise, announced or unannounced? _____
 3. Location of tabletop: _____
 4. Time started: _____
Time Completed: _____
 5. Response Plan scenario used (check one):
_____ Average most probable discharge.
_____ Maximum most probable discharge.
_____ Worst case discharge.
_____ Size of simulated spill.
 6. Describe how the following objectives were exercised:
 - a) Spill management team's knowledge of oil spill response plan:

 - b) Proper notifications:

 - c) Communications system:

Spill Management Team Tabletop Exercise (continued)

- d) Spill Management Team's ability to access contracted oil spill removal organizations:

- e) Spill Management Team's ability to coordinate spill response with On-Scene Coordinator, State and applicable agencies:

- f) Spill Management Team's ability to access sensitive site and resource information in the Area Contingency Plan:

7. Identify which of the 15 core components of your Response Plan were exercised during this particular exercise:

8. Attach description of lesson(s) learned and person(s) responsible for follow up of corrective measures.

Certifying Signature

Date

Retain this form for a minimum of five (5) years for EPA or three (3) years for USCG/PHMSA/BOEMRE.

(OSRO Certifications are in Annex 11.)

ANNEX 6..... RESPONSE CRITIQUE / PLAN REVIEW / MODIFICATION PROCESS

6.1..... AMENDMENT BY OWNER OR OPERATOR

SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN REQUIREMENTS (40 CFR §112.4 & 112.5):

a. Review Frequency

As the owner or operator of this Facility, a review and evaluation of the Spill Prevention, Control, and Countermeasure portion of this Plan will be conducted within six (6) months of any change in Facility design, construction, operation or maintenance that materially affects the Facility's potential for discharge of oil into or upon the navigable water of the United States or adjoining shore lines, or at least every five years. Any technical amendment(s) will be implemented as soon as possible but not later than six (6) months. Changes requiring amendment to this Plan include, but are not limited to:

- ◆ Commission or decommission of tanks;
- ◆ Replacement, reconstruction, or movement of tanks;
- ◆ Reconstruction, replacement, or installation of piping systems;
- ◆ Construction or demolition that might alter secondary containment structures; or
- ◆ Revision of standard operation or maintenance procedures at the facility.

b. Required Amendments

The owner or operator of this Facility will amend the Spill Prevention, Control, and Countermeasure portion of this Plan within six (6) months of its review to include more effective prevention and control technology if such technology will significantly reduce the likelihood of a spill event from the Facility and if such technology has been field proven at the time of the review.

c. Plan Certification

The Spill Prevention, Control, and Countermeasure portion of this Plan will not satisfy the requirements of 40 CFR 112 unless certified by a Registered Professional Engineer. The Engineer must: (1) be familiar with the requirements and provisions of 40 CFR 112; (2) he or his agent have examined the facility; (3) attest that the Plan is prepared in accordance with "good engineering practices", including consideration of

applicable industry standards; (4) procedures for required inspections and testing have been established and with the requirements of this part and (5) attest that the Plan is adequate for the facility. Certification for the Spill Prevention, Control, and Countermeasure portion of this Plan can be found in Annex 8, Section 8.2.2. This Plan must be re-certified by a Registered Professional Engineer whenever there is significant modification (i.e. technical amendment) of the Plan.

d. Submission and Modification

Availability

As the owners or operators of this Facility, Motiva Enterprises LLC will maintain a complete copy of this Spill Prevention, Control, and Countermeasure portion of this Plan at the Facility and will make the Plan available to the Regional Administrator or authorized representative of the Environmental Protection Agency for on-site review during normal working hours. A complete copy is maintained at the Facility because the Facility is manned at least four hours a day.

Submission to Regional Administrator

In the event that this Facility discharges more than 1,000 gallons of oil into or upon the navigable waters of the United States or adjoining shorelines in a single event, or discharges more than 42 gallons of oil upon the navigable waters of the United States or adjoining shorelines in two reportable spill events within any twelve month period, the owner or operator of this Facility will submit the following information to the Regional Administrator of the Environmental Protection Agency within 60 days.

1. Name of facility
2. Name of owner / operator
3. Location of facility
4. Maximum storage or handling capacity of the facility and normal daily throughput
5. Corrective action
6. Description and maps of facility
7. Cause of such discharge including failure analysis of the system
8. Additional prevention measures taken or contemplated
9. Other information as required by the RA pertinent to the Plan or discharge.

EPA FACILITY RESPONSE PLAN REQUIREMENTS 40 CFR § 112.20(d) & (g)

a. Review Frequency

The facility response plan must be reviewed periodically to ensure compliance with the ACP and NCP.

b. Required Amendments

Revisions to the response plan must be submitted to the Regional Administrator within 60 days when there is a change that may materially affect the response to a Worst-Case Discharge. These changes include the following: 1) facility configuration that significantly affects the information included in the Plan; 2) oil stored, handled or transported that affects the response resources; 3) names or capability of the OSROs; and 4) facility response plan procedures.

USCG REVIEW AND UPDATE PROCEDURES

a. Conditions Requiring Changes:

- ◆ Relocation or replacement of portions of the Facility (including the pipeline) which in any way substantially affect the information included in this Plan, such as a change to the Worst Case Discharge volume.
- ◆ Emergency response procedures.
- ◆ A change in the listings of economically important or environmentally sensitive areas identified in the applicable ACP in effect six (6) months prior to the Plan review.
- ◆ Change in the Facility's configuration that materially alters the information included in the Plan.
- ◆ Change in the type of oil handled, stored, or transferred that materially alters the required response resources.
- ◆ A change in the name of the Oil Spill Removal Organization (OSRO).
- ◆ Material change in capabilities of the Oil Spill Removal Organization(s) (OSROs) that provide equipment and personnel.
- ◆ Any other change that materially affect the implementation of the Plan.

b. Submission of Revisions

USCG requires changes to be submitted to them in a timely manner to the MSO (in duplicate). The plan review must occur within one (1) month of the anniversary date of the USCG approval letter. If NO CHANGES are required, the Facility will submit a letter to the USCG stating "NO CHANGES REQUIRED".

6.2..... RECORD OF CHANGES

Include record of changes here.

Date	Page	Description of Change
May 2003	Entire Plan	Conversion of FRP to ICP
Nov 2003	Table of Contents, Pgs. 2, 5, 9, 10; Introduction, Pg. 1; Core Plan, Pgs. 20 thru 23; Annex 1, Pg.1 and Figure 1.6; Annex 2, Pgs. 3 thru 12; Annex 5, Pgs. 1, 2; Annex 6, Pgs. 3, 4; Annex 8, Pgs. 1, 33 thru 38; insert behind Annex 11, Pg. 3	USCG requested revisions
Jan 2004	Table of Contents, Pgs. 2, 8, 9; Introduction, Pgs. 1, 5; Annex 1, Figure 1.2; Annex 6, Pg. 4; Annex 8, Pgs. 21(a), 21(b), 33 thru 39; Annex 11	Additional USCG changes
April 2004	Table of Contents, Pg. 10; Introduction, Pgs. 2, 3, 5; Core Plan, Pgs. 4, 6, 7; Annex 1, insert Figure 1.6(a) (Barge Unloading Manifold diagram); Annex 3d, Pgs. 1, 10, 11; Annex 6, Pg. 4; Annex 7, Pgs. 1, 2, 3, 25 – 31; Annex 8, Pgs. 2, 26, 40	Contact numbers and addresses update, miscellaneous changes
Aug 2004	Core Plan, Pgs. 3, 4, 10, 15 thru 17; Annex 5, Pgs. 2 thru 4; Annex 6, Pg. 4; Annex 7, Pgs. 2, 3; Annex 8, Pg. 14; Annex 11, Pgs. 1 thru 3, Replace inserts behind page 6, Replace PREP Certification Page and add inserts for Clean Harbors Cooperative. Insert PREP Certification Page for Marine Spill Response Corp., Insert Miller Environmental group PREP before Miller contract. Insert Clean Venture PREP before Clean Venture contract dated June 20, 2000.	EPA Review
Jan 2006	Table of Contents, Pgs. 2 thru 11; Introduction, Pg. 5; Core Plan, Pgs. 3 thru 7; Annex 3a; Annex 6, Pg. 4; Annex 8, Pgs. 31, 32; Annex 9, Pg. 2	Personnel changes and global changes
April 2006	Introduction, Pg 5; Core Plan, Pgs 3, 4, 6, Annex 6, Pg 4; Annex 11, PREP Certification for OSROs	Personnel and contact numbers updated and PREP Certification
March 2008	Table of Contents, Pgs. 9, 10; Introduction, Pgs. 1, 5; Core Plan, Pgs. 2, 3, 4, 6, 9, 14, 17, 19; Annex 2, Pg. 1; Annex 3a, Pgs. 12, 24; Annex 3b, Pgs. 1 thru 4; Annex 3d, Pg. 14; Annex 3e, Pg. 2; Annex 3f, Pgs. 1, 2; Annex 5, Pgs. 2, 3, 4, 6, 8; Annex 6, Pg. 4; Annex 7, Pgs. 20, 21; Annex 8, Pgs. 3, 22; Annex 9, Pgs. 1, 7, 8 thru 28 replaced by 7 thru 16	Personnel, titles, and contact numbers updated; revised Annex 9 to remove threat of violence that is better covered in the Facility Security Plan (FSP).
April 2008	Introduction, Pg. 5; Core Plan, Pg. 4; Annex 6, Pg. 4	Update Corporate personnel information
June 2008	Table of Contents, Pgs 3 thru 5; Introduction, Pg. 5; Core Plan, Pgs. 4, 5; Annex 2, Pg. 1; Annex 3d, Pgs.1 thru 19 (retain maps at end of Annex); Annex 6, Pg. 4; Annex 8, Pg. 23 ; Annex 12, Pgs. 8, 9	EPA Response, Tactical Assessment; Corporate personnel update
June 2009	Table of Contents, Pgs. 3, 10; Introduction, Pgs. 1, 5; Core Plan, Pgs. 2 thru 4, 6, 9; Annex 2, remove Pgs. 3 thru 12-insert Pgs. 3 thru 7; Annex 3a, Pgs. 8, 12, 13, 23, 24; Annex 3c, Pgs. 4, 5; Annex 3d, Pg. 3; Annex 4, remove Pgs. 7,8, add Pg. 7; Annex 6, Pgs. 4, 5; Annex 8, Pg. 10; Annex 9, Pgs. 1, 2, Annex 11, Pg. 7, add PREP Certification behind appropriate banner page; after Pg. 29, add Ethanol MSDS	Personnel changes; title update; PREP and MSDS added
Oct 2009	Introduction, Pgs. 2, 3, 5; Core Plan, Pgs. 3, 4, 6, 22; Annex 1, Pg. 7; Annex 6, Pg. 4; Annex 7, Pgs. 1 thru 4, 8, 9, 11, 16; Annex 8, Pg. 2	Update of Ownership and Miscellaneous revisions
Feb 2010	Table of Contents, Pgs. 6, 8; Introduction, Pg. 5; Core Plan, Pgs. 3, 4, 6; Annex 6, Pg. 4; Annex 8, Pgs. 1, 22a; Annex 11, Pg. 3; insert 2009 PREP Certifications and banner pages	OSRO changes and global revisions
Aug 2010	Table of Contents, Pgs. 3, 10; Introduction, Pg. 5; Core Plan, Pgs. 4, 9, 22; Annex 3c, Pgs. 4 thru 6; Annex 6, Pg. 4; Annex 7 Pgs. 1 thru 5, 10 thru 19; 32 and insert; Annex 8, Pgs. 19, 21, 24 thru 27; Annex 11, insert Ken's Marine contract and 2009 PREP; insert Miller Environmental Group contract	Personnel change, and global revisions; contracts; SPCC update

6.2..... RECORD OF CHANGES

Include record of changes here.

[illegible]

6.3..... EMPLOYEE'S REVIEW OF THE INTEGRATED CONTINGENCY PLAN / SPCC PLAN

For a list of employees who are familiar with and review the ICP and the SPCC, see the Training Records, "Training Sign-In Sheets".

ANNEX 7..... PREVENTION

7.1..... HAZARD EVALUATION

7.1.1..... Potential for Contamination

The potential for contamination offsite is considered very slight. Each aboveground tank is contained in a concrete dike structure with concrete floors. The greatest potential for contamination is at the Dock facility where transfers occur over water.

7.1.2..... Tank Farm

Table 7-1 lists all tanks present at the Brooklyn Terminal including the substance stored. The prefix "A" indicates an aboveground tank and the prefix "B" indicates a below ground tank. The table indicates the tank type, the year originally installed; maximum volume in gallons, the possible types of failure, the prediction of flow rate and the direction of flow for all tanks. Surface impoundments are not used for product storage at this Facility. The words "tank" and "container" can be used interchangeably in the document.

7.1.3..... Estimates of Quantity of Oils Potentially Discharged

The estimates of the quantity of oils potentially discharged are shown in Table 7-1.

The Facility is a bulk storage terminal handling several types of petroleum products. The Facility receives petroleum from Buckeye Pipeline, truck, or incidental barge. The Facility stores it and transfers it to customers through the truck loading rack.

The potential for release of gasoline during a pipeline or barge receipt is dependent upon the rate at which material is pumped from the pipeline or vessel. The Facility receives products from either the pipeline or from a vessel at a maximum delivery rate of 5,400 barrels per hour.

7.1.4..... Possible Spill Pathways

The Facility is located in Brooklyn, New York on the shore of Newtown Creek. Any release from the piping at the Dock has the potential to directly impact Newtown Creek.

Site overflow drainage would most likely gently flow northeast on the Facility's property. Drainage from the employee parking lot and the wash-bay drain in the garage is to the City Sanitary and Sewer System.

**TABLE 7-1 DESCRIPTION OF ABOVEGROUND AND
BELOW GROUND STORAGE TANK STORAGE**

Tank or Source ID*	Substance Stored	Tank Type or Surface Area	Year Installed	Type of Failure	Maximum Volume (gallons)	Containment Capacity (gallons)
A41	Ethanol	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	188,184 ¹
A42	Ethanol	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	
A43	Gasoline	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	187,782 ²
A44	Gasoline	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	
A45	Ethanol	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	240,859 ³
A46	Ethanol	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	
A47	Gasoline	Int. Floating Roof	1960	Overflow, rupture, leak	442,062	519,886 ⁴
A48	Gasoline	Int. Floating Roof	1960	Overflow, rupture, leak	445,126	490,187 ⁴
A49	Gasoline	Int. Floating Roof	1969	Overflow, rupture, leak	484,042	992,332 ⁴
A50	Gasoline	Int. Floating Roof	1969	Overflow, rupture, leak	483,790	
A51	OOS	Horizontal	1987	Overflow, rupture, leak	5,000	15,625 ⁵
A54	Puradd Gas Additive	Cone Roof	1993	Overflow, rupture, leak	5,000	

Note: Based on Tank inspections both internal and external, and prevention measures in place, the potential for a discharge is remote.

* A = aboveground tank B = belowground tank

** Prediction of rate of flow- pinpoint leak to catastrophic collapse
Direction of Flow - Northeast

Note¹: These tanks are within the same containment.

Note²: These tanks are within the same containment.

Note³: These tanks are within the same containment.

Note⁴: These tanks are contained within their own containment area.

Note⁵: These tanks are contained within their own containment area.

**TABLE 7-1 DESCRIPTION OF ABOVEGROUND AND
BELOW GROUND STORAGE TANK STORAGE (Cont'd)**

Tank or Source ID*	Substance Stored	Tank Type or Surface Area	Year Installed	Type of Failure	Maximum Volume (gallons)	Containment Capacity (gallons)
A53	Slop Tank	Horizontal	1993	Overflow, rupture, leak	6,000	598,000 ⁴
A55	OOS	Horizontal	1999	Overflow, rupture, leak	10,000	12,000 ⁶
A7	OOS	Horizontal	1945	Overflow, rupture, leak	9,600	228,000 ³
A8	OOS	Horizontal	1945	Overflow, rupture, leak	9,600	228,000 ³
A9	Ultrazol Gas Additive	Horizontal	1945	Overflow, rupture, leak	9,600	228,000 ³
A10	Nemo	Horizontal	1945	Overflow, rupture, leak	9,600	228,000 ³
OTHER POTENTIAL SPILL SOURCES						
A Recovery Well Tank	Petroleum Contact Water	Horizontal	1999	Overflow, rupture, leak	275	560
Rack Separators	Petroleum Contact Water	Horizontal	1940s	Overflow, rupture, leak	6,000	N/A
B Final Separator	Petroleum Contact Water	Horizontal	1940s	Overflow, rupture, leak	25,000	N/A
B 52	Rack Water Containment	Horizontal with cement vault	1989	Overflow, rupture, leak	4,000	6,800

Note: Based on Tank inspections both internal and external, and prevention measures in place, the potential for a discharge is remote.

* A = aboveground tank B = belowground tank

** Prediction of rate of flow- pinpoint leak to catastrophic collapse
Direction of Flow - Northeast

Note¹: These tanks are within the same containment.

Note²: These tanks are within the same containment.

Note³: These tanks are within the same containment.

Note⁴: These tanks are contained within their own containment area.

Note⁵: These tanks are contained within their own containment area.

Note⁶: This tank is contained within a vault.

**TABLE 7-1 DESCRIPTION OF ABOVEGROUND AND
BELOW GROUND STORAGE TANK STORAGE (Cont'd)**

OTHER POTENTIAL SPILL SOURCES						
Tank or Source ID*	Substance Stored	Tank Type or Surface Area	Year Installed	Type of Failure	Maximum Volume (gallons)	Containment Capacity (gallons)
Loading Rack(s)/ Transfer Area(s)	Petroleum Products	N/A	Various	Valve Failure; Leak	N/A	Catch Basins
Pipeline/ Pumps	Petroleum Products	N/A	Various	Receiving	N/A	Tank/Catch Basins
Vapor Recovery Unit	Condensate/ Glycol	N/A	Unknown	Maintenance	110	110
Garage/ Used Oil	Used Oil	Horizontal	1988	Overflow, rupture, leak	280	400
Water Collection	Petroleum Contact Water 7@700 gal. tanks	Horizontal	Various	Overflow, rupture, leak	4,900	> 700 gal. (inside dike walls)
Prover	Gasoline/ Distillates	Steel	Unknown	Overflow, rupture, leak	1,000	> 1,000 (use under truck rack)
DRUMS						
Lessee Storage Areas	Various Petroleum Products	Drums, Pails, Cases	-----	Overflow, rupture, leak	50,000	Inside Building
Drum Storage Area	Glycol/Red Dye	Drums 4@ 55 gals.	-----	Overflow, rupture, leak	220	6,800
Satellite Accumulation Area	Petroleum Debris	Drums 1@ 55 gals.	-----	Overflow, rupture, leak	55	755 gal (inside truck rack)
Garage/ Grease	Grease Oil	Drums 6@ 55	-----	Overflow, rupture, leak	330	> 55 gal (inside warehouse)

* A = aboveground tank B = belowground tank

** Prediction of rate of flow- pinpoint leak to catastrophic collapse
Direction of Flow - Northeast

Note¹: These tanks are within the same containment.

Note²: These tanks are within the same containment.

Note³: These tanks are within the same containment.

Note⁴: These tanks are contained within their own containment area.

Note⁵: These tanks are contained within their own containment area.

Note⁶: This tank is contained within a vault.

7.1.5..... Diked Areas

All aboveground storage tanks at the Brooklyn Terminal are completely surrounded by containment dikes. Spills from the storage tanks or related product and pipeline will be contained within the diked areas and pumped out over the dike walls in accordance with NYFD requirements. Air pumps equipped with hard pipe suction are used to transfer accumulated precipitation to the oil/water separator system prior to discharge through Outfall 001.

The Facility's truck loading rack, truck pump-off area, and additive unloading is equipped with curbs, roof and strip drains designed to hold the contents of the largest single compartment on a tank truck. The spill containment system drains to a 4,000-gallon underground tank. The tank is emptied as needed and the material is transported off site for disposal. The additive unloading and truck pump-off areas are located adjacent to the truck loading rack.

Discharges from paved yard area catch basins, tank truck parking area, warehouse loading platform, garage drains (excluding wash bay), and pump out from the VRU goes to the final separator prior to discharge through Outfall 001.

The final separator is equipped with a mechanical shut-off valve that prevents flow through until the oil is pumped out of the separator. Treated water from the separator is discharged under the Facility's SPDES permit.

Drawings of the spill control drainage plan for the Facility are shown in the Core Plan, Figure 1.4 and in Annex 1. These drawings indicate the general arrangement of the fixed facilities that will prevent the release of oil and petroleum to the environment.

7.1.6..... Undiked Areas

The major portion of the tank farm piping is run in the tank farm containment area or in the protected truck loading rack area. The remaining piping is run aboveground and over the protected truck loading rack area and asphalt yard area. All other drainage of the paved area flows toward catch basin drains located throughout the Facility that ultimately drains to the final separator and processed prior to discharge.

7.1.7..... Schematic Drawing of Facility

A schematic drawing of the Brooklyn Terminal with all tanks labeled is provided in the Core Plan, Figure 1.2, and in Annex 1, Figure 1.2.

Comment [J1]: Used again in 7.1.8.4

Comment [aeh2R1]:

Comment [aeh3]: storage - was removed.
Storage denotes product kept until needed. A UST is also registered.

Comment [J4]: Is there a word missing here?
Protected what?

7.1.8..... Procedures for Routine Handling of Products

The Brooklyn Terminal has a number of established procedures in use for truck loading and transfer operations. The Facility receives products from either pipeline or barge at an average delivery rate of 5,400 barrels per hour for gasoline.

7.1.8.1.... Loading (Receiving) Procedures

To provide a dependable safeguard against tank overfilling, each of the storage tanks receiving product is equipped with a two-stage high-level alarm system. In an overfill situation, both a visual and audible alarm is set off, followed by a third high-high alarm which will automatically close the valve on the receiving line to effectively shut off the transfer of product into the tank and prevent an overfill. The primary alarm is set at 90% fill capacity and with a visual white light; secondary alarm at 95% fill capacity with an amber light and shut down audible alarm, and the tertiary alarm is at 98% fill capacity with a red light and shut down alarm. The Buckeye Pipeline is equipped with an automatic shut down system if a high-high (secondary or tertiary) alarm is received, while the dock operation has manual shut down devices during product receipts.

The Facility has secondary containment around each storage tank that is described in Annex 7.2. This dike has sufficient capacity to contain any expected overflow or tank rupture.

No person is allowed to handle the receipt of products unless he or she has been thoroughly trained and has demonstrated the ability to perform these procedures. Additional details on employee training are contained in Annex 5 of this Plan.

a. Preparation of Tanks Prior to Pipeline or Vessel Receipt

Prior to the receipt of product, the tank(s) are manually gauged and a product storage tank temperature taken. The exact time the gauge was taken, depth of water, (if any), the product depth, and temperature are entered in the Facility gauge worksheet. The person taking this gauge will initial the gauge worksheet. The gauger will calculate the headroom in the storage tank(s) scheduled for receipt to ensure the tank(s) will hold the amount of the receipt.

The designated responsible person for the Facility will arrange to open the manifold receiving valves and the tank receiving valves. Receipt valves and high level alarms are tested.

Other procedures for receipt by pipeline or vessel are specified in the Operations Manual.

b. Procedures During Receipt of Product

The following descriptions are general in nature and for informational purposes only. The Facility's operating procedures and instructions govern the receipt of product. These procedures are maintained in the Terminal Office.

Qualified personnel will be on duty during receipt of product. These personnel receive periodic refresher instructions on the correct procedures to use during product transfer. The person in charge of receipt of the product follows local Facility procedures for receipt of product.

After product has started to flow, the qualified person walks the pipeline to the receiving tank checking for leaks. At the tank, the automatic gauge is checked to assure product is flowing into the proper tank.

During the tank receipt, the person in charge will calculate a rough gauge (final height) for the receiving tank. Thereafter, the person in charge of the receipt will check the tank gauge (product level) at least once an hour.

If the tank is to be filled to near capacity, it will be gauged more often when the tank is nearly full. The qualified person will remain on watch on the platform of the tank (or other suitable observation location) during the last half hour of pumping. After each hourly gauge, the receiving lines will be walked to check for leaks.

If more than one tank is on a delivery line, the tank not receiving product will be gauged prior to start of delivery and at the first hourly gauge to make sure there is no leak in its valve or confusion in quantities received that could possibly cause an overfill of the tank.

c. After pumping procedures

After completion of the receipt, external valves on the delivery line will be closed. The tank will be manually gauged and measured for water and the temperature of the produce will be accurately measured at the midpoint of the product. This information will be recorded in the gauge worksheet along with the time receipt was completed. The qualified person will initial the entries in the gauge worksheet for identification.

d. Communications During Receipt

- (1) When product is received by marine transport - On barge receipts, visual and oral communication is maintained between the vessel's hose watch and the Facility's hose watch. Product to be received, pumping rate and batch size are reviewed prior to start-up. Adequate sets of portable, intrinsically safe transceiver radios are available and used, that enables direct communication between pumping station or vessel, hose watch and tank watch.

7.1.8.1 Loading (Receiving) Procedures (Cont'd)

d. Communications During Receipt (Cont'd)

- (2) When product is received by pipeline, the person responsible for the receipt maintains the frequent communication with the pipeline company. Meanwhile, another person is constantly gauging the tanks while communicating via intrinsically safe radios with personnel in the office. Any changes (such as type of product, quantity, amount of room in the tank, the need for pipeline wash, and other appropriate information) are exchanged between the pipeline and the Facility.

7.1.8.2.... Tank Truck Procedures

a. Receipt of Product by Tank Truck

Receipt of product by tank truck is scheduled by Facility personnel. The procedures covering the receipt of product by tank truck are specified in the *Terminal Operations Manual*. Those procedures and Facility operating procedures and instructions control the receipt of product. The following description is for the purposes of information only. The procedures and instructions are maintained in the Terminal Office.

Preparation includes assignment of qualified personnel to receive the product. The truck unloading area is maintained free of obstacles. Should any accidental discharge occur, the area is graded to discharge into strip drains that go to a primary separator and then to the final separator prior to discharge.

- ◆ A fire extinguisher is maintained at the pump-off spot.
- ◆ Only qualified employees are permitted to pump-off transport trucks. These individuals are trained in the prescribed loading / unloading procedure for tank trucks according to instructions in the training manual.
- ◆ The transport truck is attended at all times during the unloading process to provide instant shut down in case of an emergency.
- ◆ All pump-off lines are capped, all valves kept closed, and the tank valve locked except when in use.
- ◆ No mobile storage tanks are at the Facility.

7.1.8.3.... Tank Truck Loading Procedures Using the Loading Rack

a. Transfer of Product Into Tank Trucks

The Facility uses an automated system for the transfer of product into tank trucks. The system is designed to prevent spills and overfills. As an additional precaution against spills, the drivers are permitted to use the truck rack control system and have received instruction from Motiva on the correct procedures to use in accessing the system, safety precautions, and spill reporting.

7.1.8.3.... Tank Truck Loading Procedures Using the Loading Rack (Cont'd)

a. Transfer of Product Into Tank Trucks (Cont'd)

The general procedures for operation of the truck rack control system are found in the *TMS System User Manual* located in the Terminal Office.

Only authorized truck drivers can gain access to the loading rack by presenting an authorization card and entering a unique driver code number (PIN).

The trucks are bottom loaded at this Facility. The trucks are equipped with a loading bar or brake locks that lock the brakes and prevent the truck from starting.

The drivers are instructed to carefully inspect vehicles to make sure that bottom valves are not leaking. Trucks are occasionally spot inspected. In the event that a vehicle fails inspection the truck will be barred from the Facility until the necessary repairs have been completed.

The automatic loading equipment also verifies that the driver has connected the grounding, overfill protection equipment, and vapor connection. This ensures that the truck is properly grounded to reduce the potential for static electrical discharges and that the truck overfilling protection equipment is properly operating. While loading, drivers must hold a "dead man" button or pumps will shut down and product will not flow to the truck.

When the driver completes loading he or she proceeds to the Bill of Lading printing area, obtains the Bill of Lading, opens the automatic gate, and leaves the Facility. Once the truck is loaded, the driver has custody of the shipment and is responsible for safe delivery of the product. Despite the fact that the driver is still inside the Facility gates, the driver is responsible for the shipment, and any spills that occur at that point will be considered transportation related.

b. Specific Procedures in Use for Truck Loading

Specific procedures in use for truck loading at the Facility are described in the *Terminal Operations Manual* and in specific terminal operating procedures. These are kept in the Terminal Office files.

- The Facility has specific safety procedures that include requirements for trucks to park away from the loading rack when awaiting the opportunity to load product.
- Loading will be stopped during severe electrical storms.
- Smoking permitted in designated areas.

7.1.8.3.... Tank Truck Loading Procedures Using the Loading Rack (Cont'd)

b. Specific Procedures in Use for Truck Loading

- Under no circumstances will a truck in the process of loading be left unattended or will it be parked at the rack unattended.
- All truck lights, heaters, accessories, and non-operating electrical equipment will be turned off before entering the loading area, and will only be turned on after leaving.
- Any stalled trucks will be towed away from rack prior to repairs. Booster batteries will be connected more than 100 feet away.
- All DOT regulations will be followed.

7.1.8.4.... Facility Tank Truck Loading and Unloading Facilities

a. Description of Drainage and Barrier Systems

The Facility's truck loading rack has a drainage system that is designed to hold the contents of the largest single compartment on a tank truck. The spill containment system has a cement slab with drain inlets and strip drains connected to a 4,000-gallon underground tank. The truck pump-off and additive unloading areas are also located within the loading rack area. The additive unloading area utilizes the same containment system as the loading rack. The holding tank is emptied as needed.

The truck rack is covered by a large canopy to minimize rainwater collecting at the rack. Any liquid (water, melted snow or hydrocarbon) that falls beneath the canopy flows by gravity to a sub surface holding tank where it is manually emptied via a vacuum truck.

b. Disconnect Protection Systems

All trucks that load at the Facility have either a locking bar or other interlocking system to prevent the truck from being moved while the vapor recovery and/or loading hoses are still connected to the truck. All trucks are also equipped with over-fill protection and are grounded to ensure further safety. Truck over-fill protection is tested annually by the carrier for every truck and records are kept in the Terminal Office.

c. Examination of Bottom Drains on Vehicles

The drivers are instructed to carefully inspect vehicles to make sure that bottom valves are not leaking. In the event that a bottom valve is discovered leaking, the truck will be barred from the Facility until the necessary repairs have been completed.

7.1.8.4 Facility Tank Truck Loading and Unloading Facilities (Cont'd)

d. Overfill Protection System

The overfill protection system shall be checked for proper operation prior to loading.

7.2..... SECONDARY CONTAINMENT

7.2.1 Dikes and Dike Capacity

The Facility tanks are surrounded by dikes that have a capacity in excess of the largest of the tanks plus an allowance for rainfall. The total storage capacity of the tank farm containment area is adequate to contain the largest tank (450,000 gallons) and has enough volume for a rainfall allowance.

The volumetric capacity of the containment areas has been prepared by David Martin, Motiva Enterprises, and RPMS Engineers.

7.2.2..... Dike Integrity

Diked areas are sufficiently imperious to contain spilled oil. Containment walls and floors are fully intact and have no permeable voids. The tank farm containment dikes are constructed of concrete. The additive tanks are contained within concrete containments or contained within underground containment areas.

7.2.3..... Curbing

The other principal area that could result in a release of petroleum is the truck loading rack. The loading rack has curbs to direct any potential spilled product to flow by gravity to a sub-surface holding tank where it is manually emptied via a vacuum truck. The loading rack containment system is substantially larger than the largest single compartment that could spill on the rack.

7.2.4..... Culverts, Gutters or Other Drainage Systems

The Facility removes tank water bottoms by transferring it into water collection tanks, then the water is pumped to a holding tank and the product is returned to storage. The tank is contained within a concrete containment dike that is adequately sized to contain the entire contents of the tank plus sufficient freeboard.

Dock drainage procedures (booming equipment and drip pans) are covered in the Dock Operations Manual.

7.2.5..... Retention Ponds

This Facility does not have a retention pond.

7.2.6..... Sorbent Materials

All sorbents used for spill response will be supplied by contracted OSROs.

7.2.7 Positive Controls to Prevent Drainage From Diked Areas

The positive controls used to prevent drainage from diked storage areas include procedural controls and equipment to prevent the discharge of oils from all areas of this Facility.

- ◆ The preferred method of removal of accumulated stormwater is by natural evaporation provided that the accumulation does not damage the equipment / structures or inhibit operations conducted within the containment area.
- ◆ In the event that drainage of an area becomes necessary due to accumulated stormwater, the containment area air pumps equipped with hard-pipe suction and discharges are pumped to the oil/water separator outside the diked area then to the final separator prior to discharge through Outfall 001. If a visible sheen or other condition indicating the presence of oil or gasoline is present, the valves are not operated.
- ◆ In the tank farm area, all tank water withdrawal valves are closed and locked when not in use. All basin drain valves, where installed, are closed and locked when not in use. When the basin drain valves are operated, the water in the basin is inspected by an employee prior to operation of the valve.
- ◆ Accumulated water is visually inspected for oil and / or oil product contamination (sample procedures and documentation forms are provided in Annex 7) and discharged only if no contamination is observed.
- ◆ The Facility does not have an effluent treatment facility.
- ◆ In the event that drainage of contaminated liquids from a containment area is required, the use of a vacuum truck, pump, or other means will be evaluated for the removal.

7.2.8 Disapproval of Flapper-Type Drain Valves

Flapper-type drain valves are not used in this Facility.

7.2.9 Drainage from Undiked Areas

This topic is discussed in detail in Annex 7.1.6.

7.3..... BULK STORAGE INSTALLATION

7.3.1..... Material Compatibility Standards

The Facility's bulk oil and oil product storage tanks have been designed in accordance with industry standards. The tanks have the following design characteristics:

- ◆ Tanks are constructed of a material that is compatible with the oil and petroleum products stored and the conditions of storage.
- ◆ Tanks are operated within "Safe Fill" levels positioned below the established capacity limits of the tank.
- ◆ A conversion of tanks or construction of a new tank for Ethanol is constructed at regulatory standards. A Management of Change for the standard is completed to cover an Ethanol change.

7.3.2..... Secondary Containment Sufficiency

A discussion of the secondary containment sufficiency for this Facility is presented in Annex 7.2 above.

7.3.3..... Drainage Bypass Systems

The Facility does not have a bypass system for Facility drainage.

7.3.4..... Underground Metallic Storage Tanks

There is one underground storage tank at this Facility. The tank is registered, within a cement vault, and provided with cathodic protection.

7.3.5..... Partially Buried Metallic Storage Tanks

There are no partially buried metallic storage tanks at this Facility.

7.3.6..... Integrity Testing Standards for Aboveground Storage Tanks

The tank integrity and testing standards are discussed in Section 7.10.

7.3.7..... Internal Heating Coils

There are no internal heating coils in any of the Facility tanks.

7.4..... DISCUSSION OF FAIL SAFE ENGINEERING AND DESIGN STANDARDS

As far as practical, the Facility has been engineered to fail-safe engineering standards. The fail-safe provisions include, but are not limited to:

- ◆ Automated truck loading rack system that allows the loading of trucks with maximum safety.

- ◆ The use of large loading rack roof to minimize the entry of rainwater into the loading rack.
- ◆ The use of audio high-level alarms on all tanks that receive product from the pipeline or vessel.
- ◆ The use of tank dikes to prevent petroleum from flowing from the Facility property.
- ◆ Tank inventory is maintained by the Alliance Distribution Measurement Policy.
- ◆ The policy manual is a separate document located at the Terminal Office.

7.4.1..... High Liquid Level Alarms

Motiva Enterprises LLC petroleum storage tanks have high liquid level alarms that have audible signal to detect high levels during filling operations. Upon hearing a high-level alarm, Facility Personnel will check the tank and tank level to verify its contents and integrity. This Facility also has valves with fusible link cut-offs to stop a high-flow event. Alarms are tested on a regular basis.

Tank high-level alarms and gauging devices are tested by pulling alarms and verifying manual versus automatic gauges prior to every receipt by the Terminal Operators. Tank high-level alarms are inspected by a certified electrician annually. Tank high-level calculations are reviewed and verified annually by Terminal Management.

7.4.2..... Emergency Shut-off Devices

The Buckeye Pipeline will shut down flow to the Facility immediately upon receiving a high-high (secondary or tertiary) level alarm. Upon receiving the high-high level alarm, the Buckeye Pipeline will automatically close pipeline valves to the Facility. The pipeline can shut down flow within five minutes in an emergency.

7.4.3..... Direct Communications Between Facility and Pipeline

The Terminal Operator and the Buckeye Pipeline Operator communicate verbally before each receipt. For attended receipts, communication is maintained after flow has started and at the completion of each receipt.

7.4.4..... Fast Response Gauging Systems

The Facility uses quick response manual gauges that enable the Terminal Operator to determine the level in each of the tanks. The tank gauges are float-style gauges.

7.4.5..... Visible Oil Leaks

Cleanup of all oil leaks starts on discovery and will be completed in a safe and expedient manner. An oil leak is considered cleaned up when there are no visible traces of oil or petroleum on the ground.

7.4.6..... Mobile or Portable Oil Storage Tanks

Mobile or portable oil storage tanks may be brought on-site during various operations. These portable tanks will be positioned or located so as to prevent spilled oil from reaching navigable waters. The largest mobile/portable container will be provided with containment plus sufficient freeboard for precipitation.

7.5..... FACILITY TRANSFER OPERATIONS

7.5.1..... Buried Piping

Below ground piping is cathodically protected and coated to reduce corrosion.

The cathodic protection system is monitored monthly and the values for impressed voltages are recorded.

The cathodic protection system is checked annually by technically competent personnel. Copies of the reports are maintained in the Terminal Office for a minimum of five (5) years.

All underground product transfer piping is tested periodically. Copies of the reports are maintained in the Terminal Office.

When a section of buried pipe is exposed, it is carefully examined for deterioration and corrective action taken as necessary.

Buried piping installed or replaced after August 16, 2002 will be provided with a protective wrapping and coating and cathodic protection.

7.5.2..... Aboveground Piping

All aboveground valves and pipelines are regularly examined during operating personnel rounds. During these examinations, operating personnel assess the general condition and necessity for corrective actions of the pipelines.

7.5.3..... Out-of-Service Piping

Out-of-service pipelines will be capped or blind flanged and marked to its origin in the event that a Facility pipeline is removed from service or is placed in standby status for an extended time. Any out-of-service piping has had the product removed and the piping has been blind flanged or capped off.

7.5.4..... Design of Piping Supports to Reduce Abrasion

All piping supports are visually inspected to ensure that any abrasion is quickly detected. The aboveground piping is supported on a transverse horizontal pipe to minimize contact and abrasion. Where appropriate, special wearing shoes are welded on to the underside of pipes to further reduce abrasion potential in areas of high pipeline movement.

7.5.5..... Inspections

The Facility conducts a number of different types of inspections. A discussion of inspections and tests is presented in Annex 7, Section 7.7. Pipeline inspections are part of the Facility's Daily Inspection. Sample Inspection Checklist(s) are included at the end of this Annex.

7.5.6..... Warning Signs for Vehicular Traffic

Warning signs for vehicular traffic are prominently placed at strategic locations throughout the Facility. These signs warn all vehicles entering the Facility about the dangers related to the aboveground piping or other oil transfer operations. The signs include instruction for use of the loading rack, spill notification directions, and entrance and exit.

7.6..... NORMAL DAILY THROUGHPUT

The normal daily throughput for the Brooklyn Terminal is 840,000 gallons. When demand and, subsequently, daily throughput increase, the potential release volumes increase. This increase typically occurs in the summer.

7.7..... DISCHARGE DETECTION BY PERSONNEL

A spill or release can be discovered by visual inspection. The initial response actions described in Core Plan, Section 1.1.7.1 will be implemented if any spills are detected.

7.7.1..... Visual Inspection

The Terminal Operator examines the tanks and the equipment in the tank farm daily to ensure that there are no visible leaks in the tanks or piping system.

All visible tanks, lines, flanges, pumps, and other equipment are examined on a routine basis for indications of leaks, drips, sweating, etc. Repair of any such item is handled on a priority basis. Inspections include gauge hatch covers, manhole covers, gaskets, and foundations.

The exposed surfaces of the tanks, pipelines, and all equipment are inspected visually for the presence of discoloration or blistering that could indicate that the exterior paint is failing, or that the tank is leaking at a seam or through a pinhole. When any discoloration or blistering is observed, the tank or pipeline is repaired or replaced.

Other records of visual inspections that are made on a periodic basis, such as the internal floating roof seals, are kept in the Terminal Office on a dedicated form.

Motiva Enterprises LLC employs contractors to perform maintenance at the Facility. The maintenance is performed as required.

7.7.2..... Facility Self Inspection

The following is a partial list of the inspections that are made periodically at the Facility. Complete files on the results of these inspections are maintained by the Facility and are retained for a period of five (5) years. **The following list is for example only and addresses only those items that are important to the operation and spill control issues at the Facility.**

TYPICAL FACILITY INSPECTIONS

Item	Description of Inspection or Test-Repair if defective
LOADING RACK	
Fire Extinguishers at all locations in the Facility	Check for full charge / recharge where needed
All loading arms on the loading rack	Visually Check for leaks, counter balance operations, dry brake coupler seal, jaws, swing stops, adjust where required.
Truck Flush Equipment	Visually Check joints, swivels, couplers, and movement freedom
All Flow Control Valves and Meters	Inspect micro-switch screws and O-rings for leaks
All Turbine Flow Meters	Inspect and Check
All Temperature Probes	Re-calibrate
All Pressure Gauges	Inspect for operation / leaks
All Strainers	Inspect
Grounding Devices at lanes on loading rack	Inspect and Check
Overfill Device	Check Operation and status lights. Check to ensure bypass switch is locked in on position.
Vapor Flow Sensors	Physical check of successful operation during loading.
Rack Junction Boxes, Electrical	Check
Intercom	Check
Seals and gaskets	Visually inspect all piping, valves, fitting and component connections, seals, gaskets and valve packing for leakage or looseness
Meter Presets	Check function, ensure seals in place
TRUCK UNLOADING SYSTEM	
Pump motor	Check for leaks
Air Eliminator	Check for leaks
Temperature Probe	Re-calibrate, Check for leaks
Water Draw Off Valves	Check for leaks, valves closed, splash blocks in-place
Pressure Gauges	Check for operation, leaks
Pump off hoses	Check for leaks
STORAGE TANK FACILITIES	
Tanks	Inspect roof devices, openings, for security and labeled. Observe domes and roofs for damage.
Water Draw Off Valves	Ensure valves closed and locked, check for leaks
Tank Level Gauges	Check for free movement, level transmitters
Tank Thermometers	Check for calibration
Tank Hi-Level Alarm	Manually Check audible alarm activation
Tank Level Transmitter	Compare readings and re-calibrate
Tank Motor Operated Valves	Completely check operation
Tank Hand Operated Valves	Check for leaks, operation
Tank Safety Control Valve	Check Operation
Product Pump Motor	Inspect for leaks, check operation
Tank Relief Valves	Check operation
Pressure Gauges	Check
Seals / Gaskets / Vitualic Couplings	Check for leaks
Tank Wall & Drains	Visual Inspection
Oil-Water Separator	Visual Inspection
Manifold Area	Thorough check of all valves, visual inspection, lubricate as required
Pipeline Signal Control Panel	Check for correct operation & pipeline signals

TYPICAL FACILITY INSPECTIONS (Cont'd)

Item	Description of Inspection or Test-Repair if defective
SECURITY SYSTEMS	
Perimeter Fence	Visual Inspection
Perimeter Gates	Check for locks and chains
Signs and Signboards	Check to ensure that warning signs, notices, instructions, and "Stop Here" lines are not obstructed and that they are secure and legible
Facility Area Lighting	Visually check lighting and ensure that lights are operating and are aimed for maximum illumination

The Facility maintains the records described below:

1. Records of Pressure Tests on Piping
2. Records of Meter Calibrations
3. Records of Repairs made to Facility
4. Environmental Records, including
 - a. Inspections of all water outfalls and water analyses
 - b. Environmental records of any and all groundwater testing
 - c. Personnel Training Records
 - d. Waste disposal manifests
 - e. Tank Cleaning and inspection records
 - f. Other records required by permits
5. Product reconciliation and tank testing records
6. Reports on cathodic protection testing and inspections
7. Records of key and lock assignments
8. Records of safety meetings

7.7.3..... Other Procedures

7.7.3.1.... Pressure Testing of All Pipelines

Motiva Enterprises LLC periodically tests all pipelines in the Facility. The work is performed by an outside contractor and reports of each pressure test are kept in the Terminal Office files for a minimum of five (5) years.

7.7.3.2.... Tank Testing

The Facility conducts periodic tank testing to ensure tank integrity. The tests are indirect, but are indications of the tank soundness.

7.7.3.3.... Cathodic Protection Testing

All steel tanks and lines are protected by an impressed current cathodic protection system. In order to protect the tanks and the pipelines, the system is inspected annually by technically qualified personnel.

7.7.3.4.... Soundness Testing and Inspection

- ◆ The containers are visually inspected by operating personnel for signs of deterioration, leaks, or the accumulation of liquids inside the containment areas.
- ◆ Each storage container is inspected according to Company policy, as required by age, condition, and service. The monthly tank inspection records are maintained in a separate file at the Facility.
- ◆ Motiva Supporting Documentation – Refer to Tank and Pressure Vessel Inspection and Maintenance Manual for details.
- ◆ Based on these conditions, the aboveground storage containers are professionally inspected and non-destructive thickness testing is performed.
- ◆ All aboveground storage tanks are included in the scope of this inspection and maintenance document. This includes small tanks, additive tanks, water tanks, horizontal tanks, UL-142 tanks, API 650 tanks, vapor tanks, pressure vessel, etc.
- ◆ Inspection/testing records are retained in a separate file at the Facility for a minimum period of five (5) years or longer based on industry standard of Corporate policy. (Industry standard is to retain records for the life of the tank).
- ◆ If a field-constructed aboveground container undergoes a repair, alteration, reconstruction, or change in service that might affect the risk of a discharge or failure due to brittle fracture, the container will be evaluated.
- ◆ Drums or totes brought on-site are built or tested to the standard(s) or in-process inspection and testing procedures established by the drum manufacturer or the drum recycler, as applicable.
- ◆ While on-site, the drums or totes will be visually examined at least monthly.

7.7.3.5.... Product Justification Record

Several types of records are kept in the Facility. These records are examined on a daily basis.

A daily record is kept of the amount of product in storage in the tanks, products shipped through the truck loading rack, and products received from pipelines and vessels.

A bulk stock loss record is maintained at the Facility and balanced monthly. The bulk stock loss record is used to compare the actual variations, both gross and net, of product to the amount that is reasonably anticipated. Any variances in the records are immediately investigated.

7.7.3.6.... Locks and Seal Assignments

The Facility maintains a log of current key assignments, locks, and security seals.

7.7.3.7.... Written Procedures for Inspection

Written procedures have been developed for this Facility and a record of the inspections, signed by the appropriate inspector, is kept in the Terminal Office files. Sample forms are also located at the end of Annex 7.

7.7.3.8.... Record Retention Policy

Records of inspections must include each container, secondary containment, and item of response equipment at the Facility. The records of inspections must be cross-reference to retention location.

Inspection of response equipment is a requirement under 40 CFR 112.7(e). Facility self-inspection requires two-steps; (1) a checklist of things to inspect; and (2) a method of recording the actual inspection and its findings. Facility Response Plan records must be kept for five (5) years. The SPCC records are retained for three (3) years. Industry standards are that tank inspection records be retained for the life of the tank. Records are maintained in the Terminal Office.

7.8..... APPLICABLE MORE STRINGENT STATE DISCHARGE PREVENTION RULES AND REGULATIONS

- ◆ 6 New York Code of Rules and Regulations, §610-614.

PIPELINE CHECKLIST

LTA:		V:		PRODUCT:		HRegular Unleaded Gasoline		
Receipt Assigned to:			Tender No:		HDiesel		HSuper Unleaded Gasoline	
Name:				HAVjet		HPremium Unleaded Gasoline		
Relief:				Quantity:		Barrels Gallons		
Assistant:				Height:		Split Tanks		
H 1. Checked High Level Alarms H Yes H No				H 3. Cut Off Loading Rack Meters				
H 2. Notify Pipeline Company				H 4. Gauged Tanks				
TANK NUMBER	TEMPERATURE (DEGREES F)	PRODUCT HEIGHT (INCHES)	WATER (INCHES)	TANK TO BE FILLED		CHECK HEADER VALVE**	ALL VALVES CLOSED	
				H Yes• H No				
				H Yes• H No				
				H Yes• H No				
**Any exception, notify Supervisor (notes)								
H 5. Contact Pipeline Delivery Station Telephone Number: H 6. Check Batch Delivery Detail with Operator H 7. Check All Tank Valves on Same Header H 8. Compute Approximate Gauge for After Receipt _____ Ft. H 9. Receipt Started H Check Header line-up / leaks H Auto Gauge Operator? HYes HNo H Take Line Sample: (time) H All Tanks Same Header? HYes HNo H Walk Line – Check Auto Gauge H Run Sample and Log _____ (time) H 10. Read and Record Hourly Gauge, Walk Lines, Check Header. H Gravity and Flashpoint _____ (reading) H 11. At First Hourly Gauge, check all gauges on all tanks connected to the same header. H 12. If tank is to be filled, ask for assistance last 30 minutes of pumping. H 13. If tank is to be filled, maintain steady watch last half hour prior to filling. H 14. After Receipt is Completed: H Checked and Cleared Pipeline _____ (time) H Closed Tank Valves(s) H Closed Header Valve H Read and Logged Auto Gauges & Time H 15. Made Final Gauge - Cut Rack Motors								
TANK NUMBER	TEMPERATURE (DEGREES F)	PRODUCT HEIGHT (INCHES)	WATER (INCHES)	SAMPLE		FINAL SAMPLE TESTED		
						HYes•		
						HNo		
						HYes•		
						HNo		
						HYes•		
						HNo		
H 16. Log All Data in Gauge Book				H Sign with Date and Time				
H 17. Receipt Responsibility Reassigned:								
Name:				Date:		Time:		
Name:				Date:		Time:		
Receipt Completed By:				Date:		Time:		

Sample Only

DAILY CHECKLIST

MOTIVA ENTERPRISES LLC
FACILITY REGISTRATION NUMBER 2-1940
25 PAIDGE AVE, BROOKLYN, NY 11222

DATE / / SHIFT PERFORMED BY:

YARD	TIME	STATUS
CHECK SEPERATOR FOR OIL ACCUMULATION / CREEK FOR SHEEN		
CHECK YARD FOR UNSAFE CONDITIONS		
CHECK PERIMETER FENCING AND LIGHTING		
MTY GARBAGE PAILS		
CHECK FOG ROOM / FOAM ROOM HEATERS AND PIPING		
DRAIN AIR COMPRESSOR YES / NO		
COMMENTS		

DOCK / TANK FARM 41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-9-10	TIME	STATUS
CHECK ALL VALVES, PUMPS, MOTORS, FOR UNSAFE CONDITIONS / LEAKS		
GAUGE TANKS, CHECK TANKS, PIPING, COUPLINGS, FLANGES FOR LEAKS		
CHECK STAIRWAYS / CROSSEOVERS FOR UNSAFE CONDITIONS		
RECEIVING BARGE OR PIPELINE		
CHECK DOCK LINES FOR PRODUCT SEEPAGE, WASTE, SEWAGE		
CHECK DOCK SYSTEM FOR DISCHARGE AT CREEK		
CHECK CONTAINMENT FOR SIGNS OF DEBRIS, EROSION, CRACKS, DISCOLORATION, SIGNS OF SPILLED OR LEAKING PRODUCT		
COMMENTS		

VAPOR RECOVERY	TIME	STATUS
DRAIN VAPOR LINE EACH SHIFT		
USE CHECKLIST ONCE PER WEEK		
CHECK FOR LEAKS, PRESSURES, UNSAFE CONDITIONS		
COMMENTS		

RACKS	TIME	STATUS
CLOSEOUT		
CHECK ADDITIVE		
CHECK FOR UNSAFE CONDITIONS, LEAKS		
GROUND CABLES / AIR HOSE OK / NG SCULLY SYSTEM OK / NG		
LOADING ARMS / COUPLER CONDITION OK / NG		
COMMENTS		

NOTIFY SUPERVISOR OF ANY POOR CONDITIONS IMMEDIATELY

PLEASE INSERT G = GOOD P = POOR IN STATUS

DIKE DRAINAGE MONTHLY LOG REPORT

DATE _____

[illegible]

ZONE #1 TANKS 47-48 ZONE #2 TANKS 41-42-43-44
ZONE #3 TANKS 45-46 REAR OF TANKS 40-50
ZONE #4 FRONT OF TANKS 49-50 ZONE #5 OLD UNDERGROUND TANK
FARM
MUST INSPECT ZONE BEFORE PUMPING. IF A SHEEN IS PRESENT DO
NOT PUMP THAT ZONE.

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	41/42	Comments
Dike volume in gallons (from Walter Gorman Calculations)	188,183.93	
Overflow fill volume of largest tank:	88,978.00	Tank 42
Gallons per foot of smaller tank:	3,360.00	Tank 41
Avg. dike wall height:	6.912	
Displacement of other tank:	23,224.32	=gallons per foot of smaller tank X avg. dike wall height
Misc displacement (pipes, pumps, etc)	3,763.68	Assume 2%
Containment Percentage:	162%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	43/44	Comments
Dike volume in gallons (from Walter Gorman Calculations)	187,781.5765	
Overflow fill volume of largest tank:	88,912.00	Tank 44
Gallons per foot of smaller tank:	3,360.00	Tank 43
Avg. dike wall height:	6.870	
Displacement of other tank:	23,083.20	=gallons per foot of smaller tank X avg. dike wall height
Misc displacement (pipes, pumps, etc)	3,755.63	Assume 2%
Containment Percentage:	162%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	45/46/7/8/9/10	Comments
Avg. Dike Height:	6.95	
Dike Length:	109.00	
Dike width:	42.00	
Dike Area:	31817.10	
Basin 1 Area	141.67	
Basin 2 Area	125.00	
Basin 3 Area	116.67	
Total Area:	32200.43	
Dike volume in gallons :	240,859.2413	
Overflow fill volume of largest tank:	96,061.00	Tank 45
Gallons per foot of Tank 46	3,360.00	Tank 46
Gallons per foot of Tank 9	647.69	
Gallons per foot of Tank 10	647.69	
Avg. dike wall height:	6.950	
Displacement of Tank 46	23,352.00	=gallons per foot of smaller tank X avg. dike wall height
Displacement of Tanks 9/10	2,450.43	Active floor of tanks are 50" above dike floor. Area below floor is open for product to enter. Tanks 7 @ 8 are out-of- service and open and will allow product to enter.
Misc displacement (pipes, pumps, etc)	4,817.18	Assume 2%
Containment Percentage:	190%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By: David O. Martin, Project Coordinator		
Tank No (s):	47	Comments
Dike volume in gallons (from Walter Gorman Calculations)	519,885.8233	
Overflow fill volume of largest tank:	442,064.00	Tank 47
Gallons per foot of smaller tank:		N/A
Avg. dike wall height:	9.260	
Displacement of other tank:	-	=gallons per foot of smaller tank X avg. dike wall height
Misc displacement (pipes, pumps, etc)	10,397.72	Assume 2%
Containment Percentage:	115%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By: David O. Martin, Project Coordinator		
Tank No (s):	48	Comments
Dike volume in gallons (from Walter Gorman Calculations)	490,186.6977	
Overflow fill volume of largest tank:	445,126.00	Tank 48
Gallons per foot of smaller tank:	-	N/A
Avg. dike wall height:	6.912	
Displacement of other tank:	-	=gallons per foot of smaller tank X avg. dike wall height
Misc displacement (pipes, pumps, etc)		Assume None
Containment Percentage:	110%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	49/50	Comments
Tank 49 Dike volume in gallons (from Walter Gorman Calculations)	497,662.4868	
Tank 50 Dike volume in gallons (from Walter Gorman Calculations)	494,669.5702	
Tank 49 & 50 combined dike volume (connected by overflow)	992,332.0570	
Overflow fill volume of largest tank:	484,039.00	Tank 42
Gallons per foot of smaller tank:	12,978.00	Tank 41
Avg. dike wall height:	8.080	
Displacement of other tank:	104,862.24	=gallons per foot of smaller tank X avg. dike wall height
Displacement of Tank 53 (horiz. Waste) in gallons:	6,000.00	Max capacity
Misc displacement (pipes, pumps, etc)	9,893.39	Assume 2%
Containment Percentage:	164%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	51/54	Comments
Dike volume in gallons (from Walter Gorman Calculations)	15,625.22	
Overflow fill volume of largest tank:	6,000.00	Tank 51
Gallons per foot of smaller tank:		N/a
Avg. dike wall height:	5.400	
Displacement of other tank:	6,000.00	=Max cap. in gallons
Misc displacement (pipes, pumps, etc)	312.50	Assume 2%
Containment Percentage:	127%	'OK'

CONTAINMENT VOLUME CALCULATIONS

ANNEX 8.....REGULATORY COMPLIANCE / CROSS REFERENCE

The following pages contain information required by the regulations that act as documentation, authorization, or certification. Additionally, there are matrices with the specific regulatory requirement, and its corresponding section or page number.

8.1 FACILITY RESPONSE PLAN

8.1.1 Response Plan Cover Sheet

8.1.2 Facility Substantial Harm Classification

8.1.3 Determination of Worst-Case Discharge

8.1.4 EPA Expanded Cross-Reference

8.2 SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

8.2.1 Legal Requirements for Preparation and Implementation Applicability

8.2.2 Professional Engineer's Certification and Approval

8.2.3 Terminal Management Certification

Log of Plan Review and Amendments

8.2.4 Qualified Individuals Authority to Initiate Oil Spill Response

8.2.5 Spill Prevention, Control, and Countermeasure Cross-Reference

8.3 HAZARDOUS WASTE CONTINGENCY PLAN

8.3.1 Distribution Letter to Local Agencies

8.3.2 Regulatory Cross-Reference

8.4 HAZARDOUS WASTE OPERATIONS EMERGENCY RESPONSE PLAN

8.4.1 Regulatory Cross-Reference

8.5 USCG Cross Reference

8.1.1 Response Plan Cover Sheet

This cover sheet will provide EPA with basic information concerning the facility. It must accompany a submitted facility response plan. Explanations and detailed instructions can be found in Appendix F of 40 CFR 112.20. Please type or write legibly in black or blue ink. Public reporting burden for the collection of this information is estimated to vary from 1 hour to 270 hours per response in the first year, with an average of 5 hours per response. This estimate includes time for reviewing instructions searching existing data sources, gathering the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate of this information, including suggestions for reducing this burden to: Chief, Information Policy Branch, PM-223, US Environmental Protection Agency, 401 M St., SW, Washington, DC 20460; and to the office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

GENERAL INFORMATION	
Owner / Operator of Facility:	<u>Motiva Enterprises LLC</u>
Facility Name:	<u>Brooklyn Terminal</u>
Facility Address (street address or route):	<u>25 Paidge Avenue</u>
City, State, US Zip code:	<u>Brooklyn, NY 11222-1281</u>
Facility Phone Number:	<u>718-383-4066</u>
Latitude (Degrees: North):	Longitude (Degrees: West)
<u>40° 44' 15" N</u>	<u>74° 56' 45" W</u>
Degrees, minutes, seconds	Degrees, minutes, seconds
Dun & Bradstreet Number:	North American Industry Classification System
<u>#023838670</u>	(NAICS) Code: <u>424710</u>
Largest above-ground Fuel Storage Tank Capacity (Gallons): <u>450,000</u>	Maximum Storage Capacity (Gallons): <u>2,358,600</u>
Number of Aboveground Fuel Storage Tanks: <u>18</u>	Worst-case Discharge Amount (Gallons) <u>450,000</u>
Facility Distance to Navigable Water. Mark the appropriate line.	
0-1/4 mile <u>X</u> 1/4 - 1/2 mile _____ 1/2 - 1 mile _____ >1 mile _____	

Applicability of Substantial Harm Criteria

Does the facility transfer oil over-water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42, 000 gallons?

YES **X**

NO _____

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and, within any storage area, does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation?

YES

NO X

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Appendix C or a comparable formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments?

YES **X**

NO

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Appendix C or a comparable formula) such that a discharge from the facility would shut down a public drinking water intake?

YES

NO ☒ X ☐

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10, 000 gallons within the last 5 years?

YES _____

NO ☒ X

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining information, I believe that the submitted information is true, accurate, and complete.

Signature: _____

Name: James W. Lintz
Please type or print

Title: Metropolitan Complex Manager

Date: _____

8.1.2..... Facility Substantial Harm Classification

(This page reserved for substantial harm classification from EPA)

8.1.3..... Determination of Worst-Case Discharge

INSTRUCTIONS

The calculation of a worst-case discharge is used for emergency planning purposes and is required in 112.20 (h)(5)(A) for facility owners and operators who must prepare a response plan. When planning for the amount of resources and equipment necessary to respond to the worst-case discharge planning volume, adverse weather conditions should be taken into consideration. Owners and operators should determine the facility's worst-case discharge from either Part A for onshore storage facilities or Part B for onshore production facilities. The worksheet integrates a facility's use of secondary containment and its proximity to navigable waters. For production facilities, the presence of exploratory wells, production wells, and storage tanks must be considered in the calculation. Part B takes these additional factors into consideration and provides steps for their inclusion in the total worst-case volume. As defined in this part, onshore oil production facilities may include all wells, flow lines, separation equipment, storage facilities, gathering lines, and auxiliary non-transportation related-equipment and facilities in a single geographical oil or gas field operated by a single operator. Although a potential worst-case volume is dependent on the risk parameter that results in the higher volume.

Marine transportation-related transfer facilities that contain fixed onshore structures used for bulk oil storage are jointly regulated by both EPA and the U.S. Coast Guard (USCG) and are termed "complexes". Because the USCG also requires response plans from transportation-related facilities to address a worst-case discharge of oil, a separate calculation for the worst-case discharge volume for USCG facilities is included in Annex 3.D.3 and done according to 33 CFR §154.1029. All complexes must compare both calculations for worst-case discharge derived by EPA and USCG and plan for whichever volume is greater.

PART A WORST-CASE DISCHARGE CALCULATION FOR ONSHORE STORAGE FACILITIES

Part A of this worksheet is to be completed by owners or operators of SPCC-regulated facilities (excluding oil production facilities) if the facility meets the criteria as presented in Appendix C to this part or if it is determined by the RA that the facility could cause substantial harm to the environment.

If you are an owner or operator of a production facility, please proceed to Part B.

A.1. SINGLE TANK FACILITIES

For facilities containing only one aboveground storage, the worst-case volume equals the capacity of the storage tank.

- FINAL WORST-CASE VOLUME: N/A GAL
- Do not proceed further.

A.2. SECONDARY CONTAINMENT - MULTIPLE TANK FACILITIES

Are all aboveground storage tank or groups of aboveground storage tanks at the facility without adequate secondary containment?

N (Y/N)

A.2.1 If the answer is yes, the final worst-case volume equals the total aboveground oil storage capacity at the facility.

- (1) -FINAL WORST-CASE VOLUME: N (Y/N)
- (2) -Do not proceed any further.

A.2.2 If the answer is no, calculate the total aboveground capacity of tanks without adequate secondary containment. If all aboveground storage tanks or groups of aboveground storage tanks of the facility have adequate secondary containment, ENTER "0" (zero).

0 GAL

A.2.3 Calculate the capacity of the largest single aboveground oil storage tank within an adequate secondary containment area or the combined capacity of a group of aboveground oil storage tanks permanently manifolded together, whichever is greater, PLUS THE VOLUME FROM QUESTION A2.

FINAL WORST-CASE VOLUME 450,000 GAL

- 1 "Storage facilities" represent all facilities subject to this part, excluding oil production facilities.
- 2 Secondary containment is defined in 112.7(e)(2) of the current rule. Acceptable methods and structures for containment are given in 112.7 (c)(1) of the current rule.
- 3 All complexes that are jointly regulated by EPA and the USCG must also calculate the worst-case discharge planning volume for the transportation related portion of the facility and plan for which ever volume is greater.

PART B: WORST-CASE DISCHARGE PLANNING VOLUME CALCULATION FOR ONSHORE PRODUCTION FACILITIES

Part B of this worksheet is to be completed by owners or operators of SPCC-regulated oil production facilities if they meet the criteria presented in Appendix C to this part, or if it is determined by the RA that the facility could cause harm. A production facility consists of all wells (producing and exploratory) and related equipment in a single geographical oil or gas field operated by a single operator.

B.1 SINGLE-TANK FACILITIES

- B.1.1 For facilities containing only one aboveground oil storage tank, the worst-case discharge planning volume equals the capacity of the aboveground oil storage tank plus the production volume of the well with the highest output at the facility. If adequate secondary containment (sufficiently large to contain the capacity of the aboveground oil storage tank plus sufficient freeboard to allow for precipitation) exists for the storage tank, multiply the capacity of the tank by 0.8.
- B.1.2 For facilities with production wells produced by pumping, if the rate of the well with the highest output is known and the number of days the facility is unattended can be predicted, then the production volume is equal to the pumping rate of the well multiplied by the greatest number of days the facility is unattended.
- B.1.3 If the pumping rate of the well with the highest output is estimated or the unattended is estimated then the production volume is determined from the pumping rate of the well multiplied by 1.5 times the greatest number of days that the facility has been or is expected to be unattended.
- B.1.4 Attachment D-1 to this appendix provides methods for calculating the production volume for explanatory wells and production wells producing under pressure.
- (1) - FINAL WORST-CASE VOLUME: N/A GAL
- (2) - Do not proceed further.

B.2 SECONDARY CONTAINMENT - MULTIPLE TANK FACILITIES

Are all aboveground storage tanks or groups of aboveground storage tanks at the facility without adequate secondary containment? No. The Brooklyn Terminal does provide for secondary containment.

- B.2.1 If the answer is yes, the final worst-case volume equals the total aboveground oil storage capacity without adequate secondary containment plus the volume of the well with the highest output at the facility.
- (1) For facilities with production wells producing by pumping. If the rate of the well with the highest output is known and the number of days the facility is unattended can be predicted, then the production volume is equal to the pumping rate of the well multiplied by the greatest number of days the facility is unattended.

- (2) If the pumping rate of the well with the highest output is estimated or the maximum number of days the facility is unattended is estimated, the production volume is determined from the pumping rate of the well multiplied by 1.5 times the greatest number of days that the facility has been or is expected to be unattended.
- (3) Attachment D-1 to this appendix provides methods for calculating production volumes for exploratory wells and production wells producing under pressure.
- (A) - FINAL WORST-CASE VOLUME: N/A GAL
- (B) - Do not proceed further.

B.2.2 If the answer is no, calculate the total aboveground capacity of tanks without adequate secondary containment. If all aboveground storage tanks or groups of aboveground storage tanks at the facility have adequate secondary containment, ENTER "0" (zero).

0 GAL

- B.2.3 Calculate the capacity of the largest single aboveground oil storage tank with an adequate secondary containment area or the combined capacity of a group of aboveground oil storage tanks permanently manifolded together, whichever is the highest, PLUS THE VOLUME FROM QUESTION B.2.6(b). Attachment D-1 provides methods for calculating the production volumes for exploratory wells and production wells producing under pressure.
- (A) - FINAL WORST-CASE VOLUME: N/A GAL
- (B) - Do not proceed further.

**TABLE 1 TO APPENDIX E
RESPONSE RESOURCE OPERATING CRITERIA OIL RECOVERY
DEVICES**

<u>Operating Environment</u>	<u>Significant Wave Height</u>	<u>Sea State</u>
River	≤1 foot	1
Inland	≤3 feet	2
Great Lakes	≤4 feet	2-3
Ocean	≤6 feet	3-4

BOOM USE

Boom Property	River	Inland	Great Lakes	Ocean
Significant Wave Height	<1	<3	<4	≤6
Sea State	1	2	2-3	3-4
Boom height - in. (draft) plus freeboard)	10-18	18-42	18-42	≥42
Reserve Buoyancy to Weight Ratio	2:1	2:1	2:1	3:1 to 4:1
Total Tensile Strength - lbs.	4,500	15-20,000	15-20,000	≥20,000
Skirt Fabric Tensile Strength - lbs.	200	300	300	500
Skirt Fabric Tear Strength - lbs.	100	100	100	125

**TABLE 3
EMULSIFICATION FACTORS FOR OIL PRODUCT GROUPS**

NON-PERSISTENT OIL

GROUP 1 1.0

PERSISTENT OIL

GROUP 2 2.5

GROUP 3 3.0

GROUP 4 1.8

TABLE 4
ON-WATER OIL RECOVERY RESOURCE MOBILIZATION FACTORS

<u>Operating Area</u>	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 3</u>
River & Canals	.30	.40	.60
Inland / Nearshore / Great Lakes	.15	.25	.40
Offshore	.10	.165	.21

Note: These mobilization factors are for total resources mobilized; not incremental resources.

TABLE 5
RESPONSE CAPABILITY CAPS BY GEOGRAPHIC AREA

<u>February 18, 1993</u>	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 3</u>
All except rivers, canals, Great Lakes	10K	20K	40K
Great Lakes	5K	10K	20K
Rivers & Canals	1,500	3,000	6,000
<u>February 18, 1998</u>			
All except rivers, canals, & Great Lakes	12.5K	25K	50K
Great Lakes	6.35	12.3	25
Rivers & Canals	1,875	3,750	7,500

Note: The caps show cumulative overall effective daily recovery rate, not incremental increases. This table updated to conform to EPA Final Rule 40 CFR 112-July 1, 1994.

TABLE 2
REMOVAL CAPACITY PLANNING TABLE

Spill Location	Nearshore / Inland			River		
Sustainability of on-water recovery	4 days			3 days		
Oil Group	% Natural Dissipation	% Recovered Floating Oil	% Oil Onshore	% Natural Dissipation	% Recovered Floating Oil	% Oil Onshore
1 Nonpersistent Oils	80	20	10	80	10	10
2 Light Crudes and Fuels	50	50	30	40	15	45
3 Medium Crudes and Fuels	30	50	50	20	15	65
4* Heavy Crudes, Fuel Residuals	10	50	70	5	20	75

* For planning purposes, non-petroleum oil must be considered a Group 4 persistent oil.

Attachment 8.1.3.1

Worksheet for Determining Planning Volume for Response Resources for Worst-case Discharge Brooklyn Terminal

Part 1 Background Information

Step (A) Calculate Worst-Case Discharge in barrels (Appendix D) 10,714

Step (B) Oil Group** (Table 3 and Section 1.2 of this Appendix) 1

Step (C) Geographic Area (choose one) ☒ Nearshore / Inland / Great Lakes ☐ or Rivers and Canals

Step (D) Percentages of Oil (Table 2)		
% Lost to Natural Dissipation	% Recovered Floating Oil	% Oil Onshore
80	20	10
(D1)	(D2)	(D3)

Step (E1) On-Water Recovery	$\frac{\text{Step (D2)} \times \text{Step (A)}}{100}$	2,143
-----------------------------	---	--

Step (E2) On-Shore Recovery	$\frac{\text{Step (D3)} \times \text{Step (A)}}{100}$	1,071
-----------------------------	---	--

Step (F) Emulsification Factor (Table 3)	1.00
--	---

Step (G) On-Water Oil Recovery Resource Mobilization Factor (Table 4)

Tier 1	Tier 2	Tier 3
0.15	0.25	0.40
(G1)	(G2)	(G3)

** Facilities storing multiple groups of oil should prepare a separate worksheet for each group that comprises 10% or more of the volume of the facility. All oil volumes or all oils must be totaled for percentage determinations.

Attachment 8.1.3.1 (continued)

**Worksheet for Determining Planning Volume for Response Resources for Worst
Case Discharge (continued)**

Part II On-Water Recovery Capacity (barrels / day)

Tier 1	Tier 2	Tier 3
321	536	857
Step (E1) x (Step (F) x Step (G1)	Step (E1) x (Step (F) x Step (G2)	Step (E1) x (Step(F) x Step (G3)

Part III Shoreline Cleanup Volume (barrels / day)

1,071
Step (E2) x (Step(F)

**Part IV Response Capacity By Geographic Area (Table 5)
(Amount needed to be contracted for, barrels / day)**

Tier 1	Tier 2	Tier 3
12,500	25,000	50,000
(J1)	(J2)	(J3)

**Part V Amount needed to be identified, but not contracted for in advance
(barrels / day)**

Tier 1	Tier 2	Tier 3
0	0	0

Part II Tier I - Step (J1)

Part II Tier 2 - Step (J2)

Part II Tier 3 - Step (J3)

NOTE: To convert to gallons / day, multiply Part II-Part V by 42.

8.1.4..... EPA Expanded Cross-Reference (40 CFR 112.20)

BASED ON APPENDIX F FACILITY-SPECIFIC RESPONSE PLAN

	LOCATION
1.1 Emergency Response Action Plan (ERAP) consisting of:	
1. Qualified Individual Information	Core Plan
2. Emergency Notification Phone List	Core Plan
3. Spill Response Notification Form	Core Plan
4. Response Equipment List and Location	Core Plan 1.1.4.1 Annex 3.e.6 OSRO dependent
5. Response Equipment Testing & Development	Core Plan 1.1.4.1 Annex 3.e.6 OSRO dependent
6. Facility Equipment Testing & Deployment	Core Plan
7. Evacuation Plan	Core Plan, Diagram in Annex 1
8. Immediate Actions	Core Plan
9. Facility Actions	Core Plan
1.2 Facility Information including:	
1. Facility Name and Location	Introduction 1.2
2. Latitude and longitude	Introduction 1.2
3. Location and drainage to a Wellhead Protection Area	Introduction 1.2
4. Owner / Operator Information	Introduction 1.2
5. Qualified Individual name with authority to implement the Plan	Introduction 1.2, Core Plan 1.1.2
6. Date of oil storage start-up	Introduction 1.2
7. Description of current facility operations	Introduction 1.2
8. Dates and types of substantial expansions	Introduction 1.2
1.3 Emergency Response Information including:	
1. Notification Phone List & Notification Form	Core Plan 1.1.2, 1.1.3, Annex 2
2. Equipment List	Core Plan; 1.1.4
3. Equipment Testing / Deployment	Core Plan 1.1.4.1, Annex 3.e.6, OSRO dependent, Annex 11
4. Personnel	Core Plan, Annex 3a
5. Evacuation Plan	Core Plan 1.1.6, Annex 1, Figure 1.3
6. Qualified Individual Duties	Annex 3a, 3b
1.4 Hazard Evaluation including:	
1.4.1. Hazard Identification	Annex 7.1
1. List each aboveground tank and below ground tank.	Table 7.1
3.a. Identify each tank or SI that stores oil or hazardous materials.	Table 7.1
3.b&c. Substance, quantity stored.	Table 7.1
3.d. Tank type / surface, area; year.	Table 7.1

**EPA EXPANDED CROSS-REFERENCE
BASED ON APPENDIX F
FACILITY-SPECIFIC RESPONSE PLAN (Continued)**

	LOCATION
3.e. Maximum capacity.	Table 7.1
3.f. Record of tank failures / causes.	Table 7.1
4. Schematic drawing using above information on tanks.	Annex 1, Figure 1.2
5. Description of Facility Operations:	Annex 7
v Description of loading and unloading of transportation vehicles that risk the release of oil during transfer processes. Include all transfer processes for trucks, railroad cars, vessels.	Annex 7.1.8
v Identify operations that may present a risk of release.	Annex 7.1
v Secondary containment volume associated with each tank and transfer point at the facility.	Annex 7.2
v Normal daily throughput and effect on potential release volumes that a negative or positive change in that throughput may	Annex 7.6
1.4.2 Vulnerability Analysis: Potential effects to human health, property, environment of spill.	
1. Water intakes	Annex 3.d
2. Schools	Annex 3.d
3. Medical facilities	Annex 3.d
4. Residential areas	Annex 3.d
5. Businesses	Annex 3.d
6. Wetlands and environmentally sensitive areas	Annex 3.d
7. Fish and wildlife	Annex 3.d
8. Lakes and streams	Annex 3.d
9. Endangered flora and fauna	Annex 3.d
10. Recreational areas	Annex 3.d
11. Transportation routes (air, land, water)	Annex 3.d
12. Utilities	Annex 3.d
13. Economically sensitive areas including: terrestrially sensitive environments, aquatic environments, and unique habitats.	Annex 3.d
1.4.3 Analysis of the Potential for a Spill based on these factors:	
v Tank age,	Table 7.1, Annex 3d
v Spill history,	Annex 4.2; 3d
v Horizontal range of spill, and	Annex 3.d.4
v Vulnerability to natural disaster.	Annex 3.d.1

**EPA EXPANDED CROSS-REFERENCE
BASED ON APPENDIX F
FACILITY-SPECIFIC RESPONSE PLAN (Continued)**

	LOCATION
1.4.4 Spill History description including:	
1. Date of spill	Annex 4.2
2. Cause,	Annex 4
3. Material spilled,	Annex 4
4. Amount in gallons,	Annex 4
5. Amount that reached navigable waters,	Annex 4
6. Effectiveness and capacity of secondary containment,	Annex 4
7. Clean-up actions taken,	Annex 4
8. Steps taken to reduce recurrence,	Annex 4
9. Total storage capacity of tanks or impoundments from which spill occurred.	Annex 4
10. Enforcement actions,	Annex 4
11. Effectiveness of monitoring equipment, and	Annex 4
12. Description of how each spill was detected.	Annex 4
1.5 Response Scenarios information needed:	
1.5.1 Small spill / Medium Spill	Core Plan, Annex 3.d.4
v Response equipment to be used for each scenario.	Core Plan, Annex 3.d.4
v Mitigation and response actions to be used in each scenarios.	Core Plan, Annex 3.d.4
1.5.2 Worst-case scenario	Core Plan, Annex 3.d.4
1.6 Discharge Detection Systems including text on:	
1.6.1 Procedures and equipment used to detect spills, and types of spill detection by personnel	Annex 7.4-7.7
1.6.2 Automated spill detection and frequency of inspection of all systems	Annex 7.4 - 7.5.5; 7.7.1; 7.7.2
1.7 Plan Implementation covering:	
1.7.1 Response resources for small, medium, worst-case spills.	Annex 3.d; 3.d.3.3 - 3.d.5
1.7.1.1 Emergency plans of spill response	Core Plan, Annex 3.c; 3.d; 3.d.3.3 - 3.d.5
1.7.1.2 Additional response training	Core Plan, Annex 3.c; 3.d; 3.d.3.3 - 3.d.5
1.7.1.3 Additional contracted help	Core Plan, Annex 3.c; 3.d; 3.d.3.3 - 3.d.5
1.7.1.4 Access to additional response equipment / experts	Core Plan, Annex 3.c
1.7.1.5 Ability to implement the Plan including response training and practice drills	Annex 3.c.2; Annex 5
1.7.2 Disposal plans-description of how and where the facility intends to recover, reuse, decontaminate, or dispose of materials after a spill	Annex 3.d.5

**EPA EXPANDED CROSS-REFERENCE
BASED ON APPENDIX F
FACILITY-SPECIFIC RESPONSE PLAN (Continued)**

	LOCATION
1.7.3 Containment and drainage planning including:	Annex 3.c.3; Annex 7.1.5, 7.2
1.7.3.1 Available volume of containment	Annex 7 - Table 7.1; Annex 7.2.1
1.7.3.2 Route of drainage from storage and transfer areas,	Annex 7.1.5; Drainage Diagram in Annex 1
1.7.3.3 Construction materials of drainage troughs	NA
1.7.3.4 Type and number of valves and separators used in the drainage system,	Annex 7.1.5
1.7.3.5 Sump pump capacities	Annex 7.1.5
1.7.3.6 The containment capacity of weirs and booms, location of all,	NA
1.7.3.7 Other cleanup materials	OSRO dependent
1.8 Self-Inspection, Drills / Exercises and Response Training	
1.8.1 Facility self-inspection, including checklists and records of inspection, meeting logs, etc.	Annex 7.7.1
1.8.1.1 Tank Inspection	Annex 7.7
1.8.1.2 Response Equipment Inspection	Annex 7.7
1.8.1.3 Secondary Containment Inspection	Annex 7.7
1.8.2 Facility Drills / Exercises	Annex 5
v Internal Exercise	Annex 5
v QI notification drills	Annex 5
v Spill Management Team Tabletop Exercise	Annex 5
v Equipment Deployment Exercise	Annex 5
v Unannounced Drills	Annex 5
v External Exercises	Annex 5
v Area Exercises	Annex 5
1.8.3 Response Training	Annex 5
1.8.3.1 Personnel Response Training Logs	Annex 5
1.8.3.2 Discharge Prevention Meeting Logs	Annex 5
1.9 Diagrams and Plot Plans of the facility:	
1.9.1 Detailed Plot Plan	Core Plan 1.1.8; Annex 1, Figure 1.2
1.9.2 Site Drainage Plan Diagram	Annex 1
1.9.3 Site Evacuation Diagram	Annex 1
1.10 Security including:	
1.10.1 Emergency cut-off locations	Annex 3.e.2.3 Annex 1, Figure 1.2, Annex 7.4.2
1.10.2 Enclosures (e.g., fencing)	Annex 3.e.2.1

**EPA EXPANDED CROSS-REFERENCE
BASED ON APPENDIX F
FACILITY-SPECIFIC RESPONSE PLAN (Continued)**

	LOCATION
1.10.3 Guards, their duties, day and night,	Annex 3.e.2.6, Core Plan 1.1.6.3
1.10.4 Lighting,	Annex 3.e.2.5
1.10.5 Valve and pump locks	Annex 3.e.2.2
1.10.6 Pipeline	Annex 3.e.2
2.0 Response Plan Cover Sheet Information including:	
v Facility Name	Annex 8.1.1
v Facility Address	Annex 8.1.1
v Facility Phone Number	Annex 8.1.1
v Latitude and Longitude	Annex 8.1.1
v Dun & Bradstreet Number	Annex 8.1.1
v Standard Industrial Classification (SIC) Code	Annex 8.1.1
v Largest Oil Storage Tank Capacity	Annex 8.1.1
v Maximum Oil Storage Capacity	Annex 8.1.1
v Number of Oil Storage Tanks	Annex 8.1.1
v Worst-Case Discharge Amount	Annex 8.1.1
v Facility Distance to Navigable Water	Annex 8.1.1
v Applicability of Substantial Harm Criteria	Annex 8.1.1
v Certification	Annex 8.1.1

8.2..... SPILL PREVENTION CONTROL AND COUNTERMEASURE (40 CFR 112.7)

8.2.1 Legal Requirements for Preparation and Implementation Applicability

This is a Spill Prevention, Control, and Countermeasure Plan to be used by the Brooklyn Terminal in responding to and reporting a petroleum discharge or substantial threat of a petroleum discharge into the navigable waters or adjoining shorelines of the United States or the State of New York. The requirement for this Plan is found in the Code of Federal Regulations, Title 40, Part 112.

This Plan has been developed to fully address the regulatory requirements of the Federal Spill Prevention, Control and Countermeasure Regulation; U. S. EPA Final Rule for Oil Pollution Prevention; Non-Transportation Related On-Shore and Off-Shore Facilities (40 CFR 112 – as amended on November 13, 2009). When accompanied by the OPA-90 Plan, this document and the OPA-90 Plan fulfill the requirements of 40 CFR Part 112.

All facilities that have the potential to discharge harmful quantities of oil into or onto the navigable waters of the United States, which have more than 1,320 gallons of aboveground storage, or a total underground storage capacity which exceeds 42,000 gallons are required to have a Spill Prevention, Control, and Countermeasure Plan. This facility meets those criteria. Harmful quantities of oil are defined in 40 CFR 110 as a visible sheen on the surface of the water or shoreline, or which are in excess of permit quantities for those facilities that have a limit in their facility NPDES Permit.

As the owners or operators of this Facility, Motiva Enterprises LLC will maintain a complete copy of this Spill Prevention, Control, and Countermeasure portion of this Plan at the Facility and will make the Plan available to the Regional Administrator or authorized representative of the Environmental Protection Agency for on-site review during normal working hours. A complete copy is maintained at the Facility because the Facility is manned at least four (4) hours per day. A complete copy is maintained at the Facility because the Facility is manned at least four hours a day.

In the event that this facility discharges more than 1,000 gallons of oil into or upon the navigable waters of the United States or adjoining shorelines in a single event, or discharges more than 42 gallons of oil upon the navigable waters of the United States or adjoining shorelines in two reportable spill events within any twelve month period, the owner or operator of this facility will submit the following information to the Regional Administrator of the Environmental Protection Agency within 60 days.

1. Name of facility
2. Name of owner / operator
3. Location of facility
4. Maximum storage or handling capacity of the Facility and normal daily throughput
5. Corrective action and countermeasures including description of equipment repairs and replacements
6. Description and maps of facility
7. Cause of such discharge including failure analysis of the system
8. Additional prevention measures taken or contemplated
9. Other information as required by the RA pertinent to the Plan or discharge

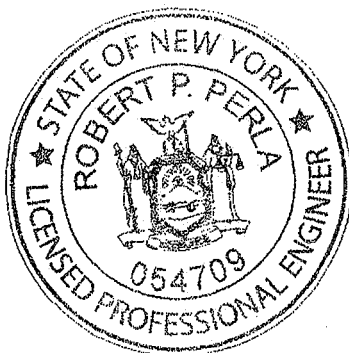
8.2.2..... Professional Engineer's Certification and Approval

PROFESSIONAL ENGINEER CERTIFICATION

By means of this Professional Engineer Certification, I hereby attest to the following:

- I am familiar with the requirements of 40 CFR Part 112 and have verified that this Plan has been prepared in accordance with the requirements of this Part.
- I or my agent have visited and examined the Facility(s).
- I have verified that this Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards.
- I have verified that the required inspection and testing procedures have been established as described in Annex 7.
- I have verified that the Plan is adequate for the Facility.
- My certification of this Plan in no way relieves the owner/operator of the Facility(s) of their duty to prepare and fully implement the Plan in accordance with the requirements of 40 CFR Part 112. I in no way assume any liability of whatsoever kind of nature by my certification.
- The owner/operator, by "Management Approval" located on the following page, acknowledges this certification and the compliance measures described herein.
- This certification is limited to the sections referenced in the Spill Prevention, Control, and Countermeasure Plan (40 CFR 112.7) cross reference table located in Section 8.2.5.

(Seal)



Date: SEP 23 2010

Registered Professional Engineer

A handwritten signature in black ink, appearing to read "Robert P. Perla", written over a horizontal line.

Robert P. Perla, P.E.
RPMS Consulting Engineers
State of New York
Registration No: 054709

8.2.3..... Terminal Management Certification

MANAGEMENT APPROVAL

- Owner/Operator responsible for Facility: Motiva Enterprises LLC
- Facility Name and Location: Brooklyn Terminal
25 Paidge Avenue
Brooklyn, NY 11222-1281
 - By signature below, the Manager approves this Plan and acknowledges that the elements identified within this Plan have been implemented, including a commitment to expend money and resources to expeditiously control and cleanup oil spills.
 - This page may be used for the initial Management Approval or for subsequent change of management and/or change of designated person accountable.

- This SPCC Plan will be implemented as herein described.

Signature: James W. Lintz Designated person accountable for oil
spill prevention at the Facility:

Name: James W. Lintz

Name: James W. Lintz

Date: 4-10-08

Title: Metropolitan Complex Mgr

Title: Metropolitan Complex Mgr.

- This SPCC Plan will be implemented as herein described.

Signature: _____

Designated person accountable for oil spill
prevention at the Facility:

Name: _____

Name: _____

Date: _____

Title: _____

Title: _____

- This SPCC Plan will be implemented as herein described.

Signature: _____

Designated person accountable for oil spill
prevention at the Facility:

Name: _____

Name: _____

Date: _____

Title: _____

Title: _____

8.2.3 Terminal Management Certification (Cont'd)

LOG OF PLAN REVIEW AND AMENDMENTS					
NON TECHNICAL AMENDMENTS Non-technical amendments are not certified by a Professional Engineer. Examples of changes include, but are not limited to, phone numbers, name changes, or any non-technical text change(s).					
TECHNICAL AMENDMENTS <ul style="list-style-type: none"> • Technical amendments are certified by a Professional Engineer. • Examples of changes include, but are not limited to, commissioning or decommissioning containers; replacement, reconstruction, or movement of containers; reconstruction, replacements, or installation of piping systems; construction or demolition that might alter secondary containment structures; changes or product or service; or revision of standard operation or maintenance procedures at a Facility. • An amendment made under this section will be prepared within six (6) months of the change and implemented as soon as possible but not later than six (6) months following preparation of the amendment. 					
MANAGEMENT REVIEW Management will review this SPCC Plan at least each five (5) years and document the review on the form below.					
Review/ Amend Date	Signature	Amend Plan (will/will not)	Description of Review Amendment	Affected Page(s)	P.E. Certification (Y/N)
3/1/10	<i>[Signature]</i>	No	—	—	N

8.2.4 Qualified Individuals Authority to Initiate Oil Spill Response – 10/98

Pursuant to the Oil Pollution Act of 1990 (OPA), State Oil Spill Response laws and Federal and State regulations under Federal and State Oil Spill Response statutes, authority to sign Notices of Federal Interest for an Oil Pollution Incident (or their equivalent), Notices of State Interest for an Oil Pollution Incident (or their equivalent), designation of responsible party for an oil spill, authority to approve witness statements, and authority to initiate oil spill response activities is hereby assigned and delegated to persons occupying and acting in the capacity of the positions as specified below in accordance with such facilities' Oil Spill Response Contingency Plans and/or the Company's Regional Response Teams.

1. At marketing terminals: Terminal Manager, Complex Manager, Superintendents, or in their absence, Assistance Terminal Managers, Terminal Supervisors, Terminal Operators, Regional Managers, Regional Response Team On-Scene Coordinator.
2. For all other locations: Manager, LSDR/HSE and Emergency Management, or any officer of the Company. Any employee of the Company serving on the Regional Response Teams or performing work required by the Regional Response Plans has necessary authority to perform their work in accordance with the objectives established with the Alliance of Shell and Saudi Refining, Inc. Limitations on approval amounts are governed by Motiva's Delegation of Authority.

8.2.5 Spill Prevention, Control, and Countermeasure Plan (40 CFR 112.3, 5, 7, 8) Cross-Reference

40 CFR § 112	BRIEF DESCRIPTION	SECTION
112.3	Requirements for preparation and implementation of Spill Prevention Control and Countermeasure Plan	---
(a,b,c)	Owners or operators ... and could reasonably be expected to have a discharge oil as described...must prepare and implement a Plan...	Sec. III, Annex 8.2.1
(d)	A licensed Professional Engineer must review and and certify a Plan for it to be effective...	Sec. III, Annex 8.2.2 (PE Certification)
(e)	Maintain a complete copy of the Plan at the facility if the facility is normally attended at least 4 hours per day, or at the nearest field office...	Sec. III Annex 8.2.1
112.5	Amendment of Spill Prevention Control and Countermeasures Plans by owners or operators	---
(a)	Amend the SPCC ...when there is a change in facility design, construction, operation or maintenance which materially affects the facility's potential for the discharge of oil...	Sec. III, Annex 8.2.3.a
(b)	...complete a review and evaluation of the SPCC at least once every five years... amend the SPCC within six months of the review...implement within six months of preparation of any amendment.	Sec. III, Annex 8.2.3.a
(c)	Have a Professional Engineer certify any technical amendment...	Sec. III, Annex 8.2.2
112.7	Guidelines for the preparation and implementation of a Spill Prevention Control and Countermeasures Plan	---
-----	...must prepare a Plan...have full approval of management...in writing.	Sec. 1 Introduction 1.1 Sec. III, Annex 8.2.3
-----	If the plan calls for additional facilities or procedures, methods, or equipment not yet fully operational, these items should be discussed in separate paragraphs, and the details of installation and operational start-up should be explained separately.	-----
-----	...follow the sequence specified (or cross-reference)...	Sec. III, Annex 8.2.5
(a)(2)	Comply with all applicable requirements in this part... [or] state reasons for non-conformance ... and describe alternate methods...	Sec. III, Annex 8.2.1
(a)(3)	Describe ... physical layout ... and include diagram ...	Sec. I, Intro. 1.2.7; Sec. II, Core Plan, Figure 1.2; Sec. III Annex 1 Fig 1.2
(a)(3)(i)	... [address in your Plan] .. the type of oil in each container and its ... capacity ...	Sec. III. Annex 7 Table 7-1
(a)(3)(ii)	... discharge prevention measures including routine handling of products ...	Sec. III. Annex 7.1.8
(a)(3)(iii)	...Drainage or discharge controls ... and procedures for control of a discharge ...	Sec. III. Annex 7.1.5, 7.1.6, 7.2.7
(a)(3)(iv)	Countermeasures for discharge discovery, response, and cleanup (both ... facility's ... and contractor)	Sec. II, Core Plan 1.1.7
(a)(3)(v)	Methods of disposal of recovered materials ...	Sec. III, Annex 3.d.6
(a)(3)(vi)	Contact list and phone numbers ...	Sec. II, Core Plan 1.1.2
(a)(4)	Relate information ... [on a discharge] ...	Sec. II, Core Plan 1.1.3
(a)(5)	Organize portions of the Plan ... that will make them readily usable....	Core Plan, Section Dividers
(b)	Where experience indicates a reasonable potential for equipment failure...include a prediction...	Sec. III, Annex 7 Table 7-1

8.2.5..... Spill Prevention, Control, and Countermeasure Plan (40 CFR 112.3, 5, 7, 8) Cross-Reference (Cont'd)

40 CFR § 112	BRIEF DESCRIPTION	SECTION
(c)(1)	Onshore facilities.	Sec. III, Annex 7.2.
(c)(1)(i)	Dikes, berms or retaining walls sufficiently impervious to contain spilled oil	Sec. III, Annex 7.2.2
(c)(1)(ii)	Curbing	Sec. III, Annex 7.2.3
(c)(1)(iii)	Culverting, gutters or other drainage systems	Sec. III, Annex 7.2.4
(c)(1)(iv)	Weirs, booms or other barriers	N/A
(c)(1)(v)	Spill diversion ponds	Sec. III, Annex 7.2.5
(c)(1)(vi)	Retention ponds	Sec. III, Annex 7.2.5
(c)(1)(vii)	Sorbent materials	Sec. III, Annex 7.2.6
(c)(2)	Offshore Facilities.	----
(c)(2)(i)	Curbing, drip pans	N/A
(c)(2)(ii)	Sumps and collection systems	N/A
(d)	If you determine that the installation of structures or equipment listed in paragraphs (c) and (h)(1) of this section...is not practicable...clearly explain in your Plan...and provide...	----
(d)(1)	<i>A strong oil spill contingency plan following...40 CFR 109.</i>	Entire Plan
(d)(2)	A written commitment of manpower, equipment and materials required to expeditiously control and remove any harmful quantity of oil discharged.	Sec. III, Annex 8.2.3
(e)	<i>Inspections and records</i>	---
	...in accordance with written procedures that you or the certifying engineer develop...with the SPCC Plan for a period of three years.	Sec. III, Annex 7.7.2, 7.7.3.8
(f)	<i>Personnel, training and spill prevention procedures</i>	---
(f)(1)	...train your oil-handling personnel in the operation and maintenance of equipment to prevent the discharges...	Sec. III, Annex 5.2.2
(f)(2)	Designate a person...accountable for oil spill prevention...	Sec. III, Annex 8.2.3
(f)(3)	Schedule and conduct spill prevention briefings...highlight and describe known spill discharges...or failures, malfunctioning components, and recently developed precautionary measures.	Sec. III, Annex 5.2.3
(g)	<i>Security (excluding oil production facilities)</i>	Sec. III, Annex 3.3.2
(h)	<i>Facility tank car and tank truck loading/unloading rack</i>	----
(h)(1)	Where loading/unloading area drainage does not flow into a catchment basin or treatment facility designed to handle discharges, use a quick drainage system... ...design any containment system to hold at least maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded at the facility.	Sec. III, Annex 7.1.8.4
(h)(2)	Provide an interlocked warning light or physical barrier system, warning signs, wheel chocks, or vehicle break to prevent vehicular departure before complete disconnect of flexible or fixed oil transfer lines.	Sec. III, Annex 7.1.8.4.b
(h)(3)	Prior to filling and departure of any tank car or tank truck, closely inspect for discharges the lowermost drain and all outlets of such vehicles should be closely examined for leakage, and if necessary, that they are tightened, adjusted, or replaced to prevent liquid leakage while in transit.	Sec. III, Annex 7.1.8.4.c
(i)	If a field-constructed aboveground container undergoes a repair, alteration, reconstruction, or change in service that might affect the risk of a discharge or failure due to brittle fracture...evaluate the container for risk...	Sec. III, Annex 7.7.3.4
(j)	In addition...include a complete discussion of conformance with applicable requirements...or any more stringent, with State rules, regulations and guidelines.	Sec. III, Annex 7.8

8.2.5..... Spill Prevention, Control, and Countermeasure Plan (40 CFR 112.3, 5, 7, 8) Cross-Reference (Cont'd)

40 CFR § 112	BRIEF DESCRIPTION	SECTION
(k)	<i>Qualified Oil-filled Operation Equipment</i>	----
(k)(1)	<i>Qualification Criteria – Reportable Discharge History:</i> The owner or operator...that has had no discharges as described in § 112.1(b) from any oil-filled operational equipment...; and	N/A
(k)(2)	<i>Alternative Requirements to General Secondary Containment.</i> If secondary containment is not provided for qualified oil-filled operational equipment pursuant to paragraph (c) of this section, the owner or operator of a facility with qualified oil-filled operational equipment must:	N/A
(k)(2)(i)	Establish and document the facility procedures for inspections or a monitoring program to detect equipment failure and/or a discharge; and	N/A
(k)(2)(ii)	Unless you have submitted a response plan under § 112.20, provide in your Plan the following:	N/A
(k)(2)(ii)(A)	An oil spill contingency plan following the provisions of part 109 of this chapter,	N/A
(k)(2)(ii)(B)	A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful.	N/A
112.8	<i>Spill Prevention, Control, and Countermeasure Plan requirements for onshore facilities (excluding production facilities)</i>	----
(a)	Meet the general requirements for the Plan listed under § 112.7, and...	----
(b)(1)	Restrain drainage from diked storage areas by valves or other positive means to prevent a spill...into the drainage system or inplant effluent treatment system, except where plan systems are designed to handle such leakage. You may empty diked areas by pumps or ejectors; however you must be manually activate these pumps...and inspect the condition of the accumulation before starting...	Sec. III, Annex 7.2.7, 7.2.8
(b)(2)	Use valves of manual, open-and-closed design... If facility drainage drains directly into water course...you must inspect and drain uncontaminated retained stormwater, as provided in...paragraphs (c)(3)(ii)(iii), and (iv).	Sec. III, Annex 7.2.7, 7.2.8
(b)(3)	Design facility drainage systems from undiked areas... to flow into ponds, lagoons or catchment basins, designed to retain oil or return it to the facility. You must not locate catchment basins in areas subject to periodic flooding.	Sec. III, Annex 7.1.6
(b)(4)	If...not engineered as in paragraphs (b)(3), equip the final discharge of all ditches with a diversion system that would...retain the oil in the facility.	Sec. III, Annex 7.1.6
(b)(5)	Where drainage waters are treated in more than one treatment unit... provide two "lift" pumps and permanently install at least one of the pumps. Whatever techniques are used, facility drainage systems engineer... to prevent a discharge as described in § 112.1(b) in case there is an equipment failure or human error...	Sec. III, Annex 7.2.7
(c)	<i>Bulk storage containers (onshore)</i>	----
(c)(1)	Not use a container for the storage of oil unless its material and construction are compatible with the material stored and conditions of storage...	Sec. III, Annex 7.3.1
(c)(2)	Construct all bulk storage container installations so that you provide a secondary means of containment for the entire contents of the largest single container plus sufficient freeboard to allow for precipitation. You must ensure that diked areas are sufficiently impervious to contain discharged oil.	Sec. III, Annex 7.2.1, 7.2.2
(c)(3)	Not allow drainage of uncontaminated rainwater from the diked area into a storm drain or discharge of an effluent discharge into an open water course, lake, or pond, bypassing the in-plant treatment system unless you:	Annex 7.2.7
(c)(3)(i)	Normally keep the bypass valve sealed closed.	Sec. III, Annex 7.2.7
(c)(3)(ii)	Inspect the retained rainwater to ensure that its presence will not cause a discharge as described in § 112.1(b).	Sec. III, Annex 7.2.7
(c)(3)(iii)	Open the bypass valve and reseal it following drainage...under responsible supervision.	Sec. III, Annex 7.2.7

8.2.5..... Spill Prevention, Control, and Countermeasure Plan (40 CFR 112.3, 5, 7, 8) Cross-Reference (Cont'd)

40 CFR § 112	BRIEF DESCRIPTION	SECTION
(c)(3)(iv)	Keep adequate records of such events.	Sec. III, Annex 7.2.7
(c)(4)	Protect any completely buried metallic storage tank installed on or after January 10, 1974 from corrosion by coatings or cathodic protection...	Sec. III, Annex 7.3.4
(c)(5)	Not use partially buried metallic tanks for the storage of oil should be avoided, unless the buried section of the shell is adequately coated...	Sec. III, Annex 7.3.5
(c)(6)	Test each aboveground container for integrity testing on a regular... Keep comparison records... In addition...frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas. Records of inspections and tests kept under usual and customary business practices will suffice for the purposes of this paragraph.	Sec. III, Annex 7.7
(c)(7)	Control leakage through defective internal heating coils by monitoring the steam return and exhaust lines...	Sec. III, Annex 7.3.7
(c)(8)	Engineer or update each container installation in accordance with good engineering practice to avoid discharges (and) provide at least one of the following devices:	----
(c)(8)(i)	High liquid level alarms with an audible or visual signal at a constantly attended operation or surveillance station. In smaller facilities, an audible air vent may suffice.	Sec. III, Annex 7.4.1
(c)(8)(ii)	High liquid level pump cutoff devices set to stop flow at a predetermined container content level.	Sec. III, Annex 7.4.2
(c)(8)(iii)	Direct audible or code signal communication between the container gauger and the pumping station.	Sec. III, Annex 7.4.3
(c)(8)(iv)	A fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges.	Sec. III, Annex 7.4.4
(c)(8)(v)	You must regularly test liquid level sensing devices to ensure proper operation.	Sec. III, Annex 7.4.1
(c)(9)	Observe effluent treatment facilities frequently enough to detect possible system upsets that could cause a discharge...	Sec. III, Annex 7.4.1
(c)(10)	Promptly correct visible discharges which result in a loss of oil from container including...seam, gaskets, piping, pumps, valves...	Sec. III, Annex 7.4.5
(c)(11)	Position or locate mobile or portable oil storage container to prevent a discharge as described in § 112.1(b)...furnish a secondary means of containment...for the largest single compartment or container with sufficient freeboard.	Sec. III, Annex 7.4.6
(d)	<i>Facility transfer operations, pumping, and facility process</i>	----
(d)(1)	Provide buried piping... installed or replaced on or after August 16, 2002, with a protective wrapping and coating...cathodically protect. If a section of buried line is exposed...carefully inspect it for deterioration. If you find corrosion damage, you must undertake additional examination and corrective action as indicated...	Sec. III, Annex 7.5.1
(d)(2)	Cap or blank-flange the terminal connection...and mark it as to origin when piping is not in service, or in standby service for an extended time.	Sec. III, Annex 7.5.3
(d)(3)	Properly design pipe supports to minimize abrasion and corrosion and allow for expansion and contraction.	Sec. III, Annex 7.5.4
(d)(4)	Regularly inspect all aboveground valves, piping, and appurtenances. ...also conduct integrity and leak testing on buried piping at the time of installation, modification, construction, relocation, or replacement.	Sec. III, Annex 7.7.1
(d)(5)	Warn all vehicles entering the facility to be sure that no vehicle will endanger above ground piping or other oil transfer operations.	Sec. III, Annex 7.5.6

**8.3..... HAZARDOUS WASTE CONTINGENCY PLAN
(40 CFR 265 SUBPART D)**

8.3.1..... Distribution Letter to Local Agencies

September 30, 2001

To: Distribution List

Re: 40 CFR 265 Subpart D Hazardous Waste Contingency Plan

This document is being provided to meet the requirements of 40 CFR 265 Subpart D requiring hazardous waste facilities to provide a contingency plan for responding to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

This regulation allows for the amendment of an existing emergency or contingency plan to address the release of a hazardous waste. The document being provided to you is the Hazardous Waste Contingency Plan (HWCP) for the Motiva Enterprises LLC Brooklyn Terminal. This plan represents the pertinent information that would be necessary to respond to an incident at the Facility, or similarly, treat victims of any incident at the Facility. For the Brooklyn Terminal, hazardous materials generated from the facility will be petroleum-based products. Material Safety Data Sheets (MSDS) for products that are stored and handled at the Facility have also been included to aid in the response effort.

The intent of this regulation is to ensure that local responders have an understanding of the facilities with which they are dealing in the event of an emergency. The Oil Spill Response Plan was prepared under the guidelines of the Oil Pollution Act of 1990 (OPA-90) and provides large quantities of information regarding Facility operations. This HWCP represents the initial actions and information that would be needed for a response from any of the local responders or emergency services. By additionally providing MSDS sheets for products handled at the Facility we believe we are meeting the intent of the regulation.

Please maintain this document as a record of the actions that will be taken to minimize hazards to human health or the environment from fires, explosions or any unplanned release of hazardous waste.

Nassau County Emergency Management
Attn: Inspector Tom Skelly
140 15th Street
Mineola, NY 11501

Nassau County Medical Center
Emergency Coordinator
2201 Hempstead Turnpike
East Meadow, NY 11554

Lawrence Fire Department
Emergency Coordinator
75 Washington Avenue
Lawrence, NY 11559

Nassau County Police Dept.
Emergency Coordinator
1699 Broadway
Hewlett, NY 11557

Nassau County Fire Marshall's Office
Emergency Coordinator
899 Jerusalem Avenue
Uniondale, NY 11553

Malverne Fire Dept.
Emergency Coordinator
1 Britton Circle
Malverne, NY 11565

At this time, it is our intentions that this document will be updated when significant changes in chemical storage result in a change in emergency strategy. Please retain this letter as an introduction to this document. If additional information is needed, please contact the Terminal Manager at 516-371-4780.

Sincerely,

George O'Connor
Health and Safety Representative

Attachments

c: Nassau County Emergency Management
Lawrence Fire Department
Malverne Fire Dept.
Nassau County Medical Center
Nassau County Police Department
Nassau County Fire Marshall's Office

8.3.2..... Regulatory Cross-Reference

(Hazardous Waste Contingency Plan Cross Reference 40 CFR 265 Subpart D)

HWCP 40 CFR 265 Subpart D	Located in ICP
265.52(a). Implementation Actions.	Core Plan 1.1.7
265.52(c). Arrangements with local agencies.	Core Plan 1.1.6.4
265.52(d). Names, addresses, numbers of Emergency Response Coordinators (Qualified Individuals)	Core Plan 1.1.2
265.52(e). Listing of emergency equipment: <ul style="list-style-type: none"> • Fire extinguishing systems • Spill control equipment, communications • Alarms • Decontamination equipment 	Core Plan 1.1.4.5 1.1.4.4 1.1.4.4, 1.1.6.1 1.1.7.16
265.52(f). Evacuation Plan. 265.16 (d)(2) Job Descriptions	Core Plan 1.1.6 Annex 3.a.5

8.4..... HAZARDOUS WASTE OPERATIONS EMERGENCY RESPONSE PLAN (29 CFR 1920.120)

8.4.1 Regulatory Cross-Reference

CROSS REFERENCE FOR HAZARDOUS WASTE OPERATIONS EMERGENCY RESPONSE PLAN AND THE FACILITY RESPONSE PLAN (OPA '90)

Motiva Enterprises LLC HAZWOPER Plan (29 CFR 1910.120(q)(2)(i-xiii))	Location in Core Plan (ERAP) & Integrated Contingency Plan
1.0 Pre-Emergency Planning and Coordination with Outside Parties (q)(2)(i)	
1.1 Hazardous Substances Stored At facility*	Core Plan 1.1; Annex 7, Table 7.1
1.2 Foreseeable types of incidents*	Core Plan 1.1.7.1; Annex 1, Figure 1.2
1.3 Plot Plan*	Core Plan 1.1.8; Annex 1, Figure 1.2
1.4 Pre-emergency planning and coordination*	Core Plan 1.1.6.1-1.1.6.4
2.0 Personnel Roles and Training (q)(2)(ii)	Core Plan 1.0 - Introductory Note; Annex 3.a.5; Annex 5; Annex 11.2
3.0 Communications and Notifications (q)(2)(ii)	Core Plan 1.1.1, 1.1.2 - Notification Lists; Core Plan 1.1.4.3; Annex 9.1.2, 9.2
4.0 Emergency Recognition and Prevention (q)(2)(iii)	Core Plan 1.1; 1.1.7.1; Annex 9
5.0 Safe Distances and Places of Refuge (q)(2)(iv)	Core Plan 1.1.6.1; Annex 9.6.7
6.0 Evacuation Routes and Procedures (q)(2)(vi)	Core Plan 1.1.6.1, 1.1.6.2, 1.1.8, Figure 1.3; Annex 1, Figure 1.3
7.0 Site Security and Control (q)(2)(v)	Core Plan 1.1.6.3; Annex 9
8.0 Decontamination (q)(2)(vii)	Core Plan 1.1.7.16
9.0 Emergency Medical Treatment and First Aid (q)(2)(viii)	Core Plan 1.1.7.16
10.0 Emergency Response Notifications (q)(2)(ix)	Core Plan 1.1.1 - 1.1.3, 1.1.4.4, 1.1.6.1, 1.1.7.1; Annex 9.2
11.0 Emergency Response Procedure (q)(2)(ix)	1.1.7 - Immediate Actions; Annex 9
12.0 Personal Protective Equipment (q)(2)(xi)	Core Plan 1.0 - Introductory Note, 1.1.4.1
13.0 Review Process (q)(2)(x)	Core Plan 1.1.7.3

8.5..... USCG Cross Reference for OPA 90 Plan (33 CFR §154.1030) Final Rules

33 CFR §154.1030	LOCATION
(a) The plan must be written in English.	Entire Plan
(b) A response plan must be divided into the sections listed in this paragraph and formatted in the order specified herein unless noted otherwise. It must also have some easily found marker identifying each section listed below. The following are the sections and subsections of a facility response plan:	TOC, Tabs and Annex 8.5
(1) Introduction and plan contents.	Section I, 1.1
(2) Emergency response action plan:	Section II Core Plan, 1.1
(i) Notification procedures.	Section II Core Plan, 1.1.2 and 1.1.3
(ii) Facility's spill mitigation procedures.	Section II Core Plan, 1.1.7
(iii) Facility's response activities.	Section II Core Plan, 1.1.7.4
(iv) Fish and wildlife and sensitive environments.	Section III Annex 3
(v) Disposal plan.	Section III Annex 3.d.6
(3) Training and Exercises:	Section III Annex 5
(i) Training procedures.	Section III Annex 5.2
(ii) Exercise procedures.	Section III Annex 5.1
(4) Plan review and update procedures.	Section III Annex 6
(5) Appendices.	
(i) Facility-specific information.	Section I, 1.2
(ii) List of contacts.	Section II Core Plan, 1.1.2
(iii) Equipment lists and records.	Section II Core Plan, 1.1.4
(iv) Communications plan.	
(v) Site-specific safety and health plan.	Section II Core Plan, 2.1.1.1 and Section III Annex 3.b.3
(vi) List of acronyms and definitions.	Section III Annex 12
(vii) A geographic-specific appendix for each zone in which a mobile facility operates.	N/A
(c) The required contents for each section and subsection of the plan are contained in §§ 154.1035, 154.1040, and 154.1041, as appropriate.	Section III Annex 8.5
(d) The sections and subsections of response plans submitted to the COTP must contain at a minimum all the information required in §§154.1035, 154.1040, and 154.1041, as appropriate. It may contain other appropriate sections, subsections, or information that are required by other Federal, State, and local agencies.	Section III Annex 8.5 and Annex 10
(e) For initial and subsequent submission, a plan that does not follow the format specified in paragraph (b) of this section must be supplemented with a detailed cross-reference section to identify the location of the applicable sections required by this subpart.	Section III Annex 8.5
(f) The information contained in a response plan must be consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR part 300) and the Area Contingency Plan(s) (ACP) covering the area in which the facility operates. Facility owners or operators shall ensure that their response plans are in accordance with the ACP in effect 6 months prior to initial plan submission or the annual plan review required under § 154.1065(a). Facility owners or operators are not required to, but may at their option, conform to an ACP which is less than 6 months old at the time of plan submission.	Section I, 1.1

8.5..... USCG Cross Reference for OPA 90 Plan (33 CFR §154.1035) Final Rules

CFR §154.1035		LOCATION
(a)(1)	Facility's address, phone, fax.	Introduction 1.2
(a)(2)	Facility's location	Introduction 1.2
(a)(3)	24 hour contact	Core Plan 1.1.2
(a)(4)	Table of Contents	After Cover Page
(a)(5)	Cross Reference	Annex 8
(a)(6)	Record of Changes	Annex 6.2
(b)(1)(i)	Notification Procedures (A) Facility personnel, OSROs, qualified individuals (B) Federal, State, local agencies	Core Plan; Annex 2
(b)(1)(ii)	Notification Form	Core Plan
(b)(2)(i)	Spill mitigation procedures (A) Average most probable discharge (B) Maximum most probable discharge (C) Worst case discharge (D) Worst case discharge from the non-transportation related Facility	Core Plan; Annex 3.d
(b)(2)(ii)	Prevention procedures (A) Failure of transfer apparatus (B) Tank overfill (C) Tank failure (D) Piping rupture (E) Piping leak (F) Explosion / Fire (G) Equipment failure	Core Plan, Annex 7
(b)(2)(iii)	Listing of equipment	Core Plan; Annex 3.d
(b)(3)(i)	Facility personnel's responsibilities for response	
(b)(3)(ii)	Qualified Individual's responsibilities	Annex 3.a
(b)(3)(iii)	Corporate management response team's organizational structure (A) Command and control (B) Public information (C) Safety (D) Liaison with governmental agencies (E) Spill operations (F) Planning (G) Logistics support (H) Finance	Annex 3.a-3.f
(b)(3)(iv)	Oil Spill Removal Organizations (A) Equipment and supplies to meet...§154.1045, §154.1047 or... (B) Trained personnel necessary to continue operation...first 7 days of the response.	Core Plan
(b)(3)(v)	...include job descriptions for each spill management team member within the organizational structure...must include the responsibilities and duties of each spill management team member in a response action.	Annex 3.a.5

8.5..... USCG Cross Reference for OPA 90 Plan (33 CFR §154.1035) Final Rules (Cont'd)

CFR §154.1035 (Cont'd)	LOCATION
(b)(3)(vi) For facilities that handle, store, or transport group II through group IV petroleum oils, and that operate in waters where dispersant use is pre-authorized, this subsection of the plan must also separately list the resource providers and specific resources, including appropriately trained dispersant-application personnel, necessary to provide the dispersant capabilities required in the subpart. All resources providers and resources must be available by contract or other approved means as described in § 154.1028(a). The dispersant resources to be listed within this section must include the following:	N/A
(b)(3)(vi)(A) Identification of each primary dispersant staging site to be used by each dispersant-application platform to meet the requirements of this subpart	N/A
(b)(3)(vi)(B) Identification of the platform type, resource-providing organization, location, and dispersant payload for each dispersant-application platform identified. Location data must identify the distance between the platform's home base and the identified primary dispersant staging site for this section.	N/A
(b)(3)(vi)(C) For each unit of dispersant stockpile required to support the effective daily application capacity (EDAC) of each dispersant-application platform necessary to sustain each intended response tier of operation, identify the dispersant product resource provider, location, and volume. Location data must include the stockpile's distance to the primary staging sites where the stockpile would be loaded onto the corresponding platforms.	N/A
(b)(3)(vi)(D) If an oil spill removal organization has been evaluated by the Coast Guard, and its capability is equal to or exceeds the response capability needed by the owner or operator, the section may identify only the oil spill removal organization, and not the information required in paragraphs (b)(3)(vi)(A) through (b)(3)(vi)(C) of this section.	N/A
(b)(3)(vii) This subsection of the plan must also separately list the resource providers and specific resources necessary to provide aerial oil tracking capabilities required in this subpart. The oil tracking resources to be listed within this section must include the following: (A) The identification of a resource provider; and (B) Type and location of aerial surveillance aircraft that are ensured available, through contract or other approved means, to meet the oil tracking requirements of § 154.1045(j).	Annex 11
(b)(3)(viii) For mobile facilities that operate in more than one COTP zone, the plan must identify the oil spill removal organization and the spill management team in the applicable geographic-specific appendix. The oil spill removal organization(s) and the spill management team discussed in paragraph (b)(3)(iv) or this section must be included for each COTP zone in which the facility will handle, store, or transport oil in bulk.	N/A

8.5..... USCG Cross Reference for OPA 90 Plan (33 CFR §154.1035) Final Rules (Cont'd)

CFR §154.1035 (Cont'd)	LOCATION
(b)(3)(ix) For mobile facilities that operate in more than one COTP zone, the plan must identify the oil spill removal organization and the spill management team in the applicable geographic-specific appendix. The oil spill removal organization(s) and the spill management team discussed in paragraph (b)(3)(iv)(A) of this section must be included for each COTP zone in which the facility will handle, store, or transport oil in bulk.	N/A
(b)(4)(i) List areas of economic importance and environmental sensitivity	Annex 3.d
(b)(4)(ii) For a worst case discharge (A) List areas of economic importance and environmental sensitivity (B) Response actions to protect these areas (C) Map showing locations	Annex 3.d, Annex 1
(b)(4)(iii) For a worst case discharge identify appropriate equipment and required personnel to protect above mentioned areas	Section 11 Core Plan, 1.1.4, 1.1.5
(b)(4)(iii)(A) Identify the appropriate equipment and required personnel to protect all fish and wildlife and sensitive environments ...	Annex 3
(b)(4)(iii)(B) Calculate the distances required by...by selecting one method described...	-----
(b)(4)(iii)(B)(1) Distances calculated...	Core Plan, Annex 3
(b)(4)(iii)(B)(2) A spill trajectory or model may be substituted for distances...	----
(b)(4)(iii)(B)(3) The procedures contained in the Environmental Protection Agency's regulations...may be substituted for distances...	----
(b)(4)(iii)(C) Based on historical...COTP may require the additional fish and wildlife and sensitive environments	----
(b)(5) Disposal Plan	Annex 3.d.7
(c)(1) Training Procedures	Annex 5.2.2.3.
• Facility Personnel	Annex 5.2.2.
• QI / AQI	Introduction 1.2.5; Annex 5.2.2.1.
• Members of Spill Management Team	Annex 5.1.3, 5.1.5
• OSHA Training Requirements	Introduction p. 1; Annex 5.2.2.3.
• Method of training for volunteers	Annex 3.e.5; Annex 3.f.2
• Training Records Maintained	Annex 5.2.2
• Location of Training Records	Annex 5.2.2
(c)(2) Exercise Procedures	Annex 5
(c)(3) Training and exercises	Annex 5
(d) Plan review and update	Annex 6
(e)(1) Facility specific information	Intro 1.2
(e)(1)(i) Facility plan showing moorings, transfer locations, control stations, safety equipment; location and capacity of all piping and storage tanks.	Annex 1

8.5..... USCG Cross Reference for OPA 90 Plan (33 CFR §154.1035) Final Rules (Cont'd)

CFR §154.1035 (Cont'd)		LOCATION
(e)(1)(ii)	Description of number of vessels that can transfer to simultaneously	Intro 1.2
(e)(1)(iii)	Location of first valve separating transportation-related portion of facility from non-T-R	Annex 1
(e)(1)(iv)	MSDS	Annex 11
(e)(2)(i)	Means to contact qualified individual and alternates	Core Plan 1.1.2
(e)(2)(ii)	Means to contact OSROs	Core Plan 1.1.2
(e)(2)(iii)	Means to contact Federal, State and Local Agencies	Core Plan 1.1.2
(e)(3)	Equipment List & records	Core Plan
(e)(3)(i)	For responding to Average Most Probable Discharge	Core Plan; Annex 3.d
(e)(3)(ii)	For responding to a Worst Case Discharge	Core Plan; Annex 3.d
(e)(3)(iii)	USCG classification of OSROs. For organizations not classified, list equipment including: (A) Nameplate information (B) Effective daily recovery rate (C) Boom height and type of end connectors (D) Type of spill for which equipment will be used (E) Total daily capacity for storage / disposal (F) Communication equipment (G) Location of equipment (H) Date of last inspection	Core Plan 1.1.4.3
(e)(4)	Communication Plan	Core Plan; Annex 3.b
(e)(5)	Site Specific Safety & Health Plan	Annex 3.b.3
(e)(6)	List of Acronyms	Annex 12

8.5..... USCG Cross Reference for OPA 90 Plan (33 CFR §154.1045) Final Rules

CFR §154.1045	LOCATION
(a) ...facility that handles... Group I through Group IV petroleum oils..	----
(a)(1) ...criteria in Table 1 ...identification of appropriate equipment..	----
(a)(2)(i)...(v) ice conditions; debris;...other appropriate...	----
(a)(3)(i)...(ii) The COTP may reclassify a specific body of water or location...	----
(b)(1)...(3) Response equipment must ---	----
(c) ...identify response resources...average most probable discharge...	Core Plan, Annex 3.d, Annex 8
(c) (1) 1,000 feet of containment boom or two times the length of the largest vessel...and the means of deploying and anchoring the boom... within 1 hour of the detection of a spill;	Core Plan, Annex 3.d, Annex 8
(c) (2) ...recovery devices and oil storage capacity... within 2 hours...	Core Plan, Annex 3.d, Annex 8
(d) ...identify response resources...maximum most probable discharge...	Core Plan, Annex 3.d, Annex 8
(d)(1) ...include sufficient containment boom, oil recovery devices, and storage capacity for any recovery of up to the maximum most probable discharge planning volume...	Annex 3.d, Annex 8
(d) (2) ...resources must be appropriate for each group of oil...	Core Plan, Annex 3.d, Annex 8
(d) (3) ...must be positioned... arrive... scene of a discharge...	----
(d)(3)(i) ...within the specified times...	Annex 8
(d)(3)(ii) In higher volume port areas...within 6 hours	Annex 8
(d)(3)(iii) In all other locations, ...within 12 hours	Annex 8
(d)(4) ...COTP may impose additional operational restrictions	----
(e) ...identify the response resources... worst case discharge...	Annex 8
(e)(1) The location must be suitable to meet the response times identified	Annex 8
(e)(2) The response resources must be appropriate for---	----
(e)(2)(i) The volume of the facilities worst case discharge	Core Plan, Annex 3.d, Annex 8
(e)(2)(ii) Group(s) of oil... handles, stored or transported by the facility; and	Core Plan, Annex 3.d, Annex 8
(e)(2)(iii) The geographic area(s) in which the facility operates.	Core Plan, Annex 3.d, Annex 8
(e)(3) ...sufficient boom, oil recovery devices, and storage capacity to recover the worst case discharge planning volumes.	Core Plan, Annex 3.d, Annex 8
(e)(4) ...quantity of response resources...to response...to the worst case discharge to the maximum extent practicable.	Core Plan, 3.f.1, 3.d
(e)(5) ...The following percentages of the response equipment...must be capable of operating in waters of 6 feet or less depth.	----
(e)(5)(i) Offshore – 10 percent	N/A
(e)(5)(ii) Nearshore/inland/Great Lakes/rivers and canals – 20 percent.	Core Plan, Annex 3.d

8.5..... USCG Cross Reference for OPA 90 Plan (33 CFR §154.1045) Final Rules (Cont'd)

CFR §154.1045 (Cont'd)	LOCATION
(e)(6) ...COTP may impose additional operational restrictions...	----
(f) Response equipment...must be capable of arriving on scene within the times specified in this paragraph...	Core Plan, Annex 3.d, Annex 8
(g) ...response equipment identified for Tier 1 plan credit must be capable of being mobilized and en route to the scene of a discharge within 2 hours of notification ...	Core Plan, Annex 3.d, Annex 8
(g)(1) Either directly or through the qualified individual; and	Core Plan, Annex 3.d, Annex 8
(g)(2) Within 30 minutes of a discovery	Annex 3.d, Annex 8
(h) Response resources identified for Tier 2 and Tier 3 plan credit must be capable of arriving on scene within the time specified ...	Annex 3.d, Annex 8
(i) The owner or operator of a facility that handles, stores, or transports groups II through IV petroleum oils within the inland, nearshore, or offshore areas where pre-authorization for dispersant use exists must identify in their response plan, and ensure the availability of, through contract or other approved means, response resources capable of conducting dispersant operations within those areas.	N/A
(i)(1) Dispersant response resources must be capable of commencing dispersant-application operations at the site of a discharge within 7 hours of the decision by the Federal On-Scene Coordinator to use dispersants.	N/A
(i)(2) Dispersant response resources must include all of the following:	N/A
(i)(2)(i) Sufficient volumes of dispersants for application as required by paragraph (i)(3) of this section. Any dispersants identified in a response plan must be of a type listed on the National Oil and Hazardous Substances Pollution Contingency Plan Product Schedule (which is contained in 40 CFR part 300, and available online from the U.S. Government Printing Office).	N/A
(i)(2)(ii) Dispersant-application platforms capable of delivering and applying the dispersant on a discharge in the amounts as required by paragraph (i)(3) of this section. At least 50 percent of each EDAC tier requirement must be achieved through the use of fixed-wing, aircraft-based application platforms. For dispersant-application platforms not detailed within the DMP2, adequacy of performance criteria must be documented by presentation of independent evaluation materials (e.g., field tests and reports of actual use) that record the performance of the platform.	N/A

8.5..... USCG Cross Reference for OPA 90 Plan (33 CFR §154.1045) Final Rules (Cont'd)

CFR §154.1045 (Cont'd)	LOCATION
(i)(2)(iii) Dispersant-application systems that are consistent in design with, and are capable of applying dispersants within, the performance criteria in ASTM F1413-07 (incorporated by reference, see § 154.106). For dispersant-application systems not fully covered by ASTM F1413-07, such as fire monitor-type applicators, adequacy of performance criteria must be documented by presentation of independent evaluation materials (e.g., laboratory tests, field tests, and reports of actual use) that record the design of performance specifications.	N/A
(i)(2)(iv) Dispersant-application personnel trained in and capable of applying dispersants according to the recommended procedures contained within ASTM F1737-07 (incorporated by reference, see § 154.106).	N/A
(i)(3) Dispersant stockpiles, application platforms, and other supporting resources must be available in the quantity and type sufficient to treat a facility's worst-case discharge (as determined by using the criteria in appendix C, section 8) or in quantities sufficient to meet the requirements in Table 154.1045(i) of this section, whichever is the lesser amount.	N/A
(j) The owner or operator of a facility handling Groups I through IV petroleum oil as a primary cargo must identify in the response plan, and ensure the availability through contract or other approved means, of response resources necessary to provide aerial oil tracking to support oil spill assessment and cleanup activities. Facilities operating exclusively on inland rivers are not required to comply with this paragraph. Aerial oil tracking resources must:	Annex 11
(j)(1) Be capable of arriving at the site of a discharge in advance of the arrival of response resources identified in the plan for tiers 1, 2, and 3 Worst-Case Discharge response times, and for a distance up to 59 nautical miles from shore (excluding inland rivers).	Annex 11
(j)(2) Be capable of supporting oil spill removal operations continuously for three 10-hour operational periods during the initial 72 hours of the discharge;	Annex 11
(j)(3) Include appropriately located aircraft and personnel capable of meeting the response time requirement for oil tracking from paragraph (j)(1) of this section; and	Annex 11
(j)(4) Include sufficient numbers of aircraft, pilots, and trained observation personnel to support oil spill removal operations, commencing upon initial assessment, and capable of coordinating on-scene cleanup operations, including dispersant and mechanical recovery operations. Observation personnel must be trained in:	Annex 11

8.5..... USCG Cross Reference for OPA 90 Plan (33 CFR §154.1045) Final Rules (Cont'd)

CFR §154.1045 (Cont'd)		LOCATION
(j)(4)(i)	The protocols of oil-spill reporting and assessment, including estimation of slick size, thickness, and quantity; and	Annex 11
(j)(4)(ii)	The use of assessment techniques in ASTM F1779-08 (incorporated by reference, see §154.106), and familiar with the use of other guides, such as NOAA's "Open Water Oil Identification Job Aid for Aerial Observation," and NOAA's "Characteristic Coastal Habitats" guide	Annex 11
(k)	...identify response resources with firefighting capability ...	Annex 9.5
(l)	...identify equipment and required personnel ... to protect fish and wildlife and sensitive environments.	Core Plan, Annex 3.d
(l)(1)	...the identified response resources must include the quantities of boom sufficient to protect	Annex 3.d, Annex 6
(l)(2)	...resources and response methods ... must be consistent with the ... ACP in effect 6 months prior to initial plan submission or the annual plan review ...	Annex 3.d, Annex 6
(m)	The response plan for a facility that handles, stores, or transports Groups I through IV petroleum oils must identify an oil spill removal organization(s) with response resources that are available...	Core Plan, Annex 3.d, Annex 8
(m)(1)	Except as required in paragraph (l)(2) ... shoreline clean-up response resources required must be determined as described in Appendix C of this part.	Annex 3.d
(m)(2)	...resources and response methods ... must be consistent with the ... ACP in effect 6 months prior to initial plan submission or the annual plan review ...	Annex 3.d, Annex 6
(n)	Appendix C ... quantity of response resources ... for the maximum most probable discharge volume, and for each worst case discharge response tier.	Annex 3.d
(n)(1)	Included in Appendix C of this part is a cap that recognizes the practical and technical limits of response capabilities ...	Annex 3.d
(n)(2)	...Appendix C of this part lists the caps that will apply in ... February 18, 1998. ...facility whose estimated recovery capacity exceeds ... caps ... shall identify sources of additional equipment equal to twice the cap ... or the amount necessary to reach the calculated planning volume, whichever is lower.	Annex 3.d
(o)(1)...(5)	The Coast Guard will initiate a review of cap increases and other requirements contained within this subpart ...	----

8.5..... USCG Cross Reference for OPA 90 Plan (33 CFR §154.1050 and §154.1055) (Cont'd)

CFR §154.1050		LOCATION
(a)	Must identify the training to be provided to each individual with responsibilities under the plan.	Annex 5
(b)	A facility owner or operator shall ensure the maintenance of records sufficient to document training of facility personnel....	Annex 5.2
(c)	Where applicable, a facility owner or operator shall ensure that an oil spill removal organization identified in a response plan to meet the requirements of this subpart maintain records sufficient to document training....	Annex 5.1.1
(d)	The facility owner or operator remains responsible for ensuring that all private response personnel are trained to meet the Occupational Safety and Health Administration (OSHA) standards for emergency response operations in 29 CFR 1910.120.	Introduction 1.1
CFR §154.1055		LOCATION
(a)(1)	Qualified individual notification exercises...	Annex 5
(a)(2)	Spill management team tabletop exercises...	Annex 5
(a)(3)(i)	Equipment deployment exercises...facility owned and operated.	Annex 5
(a)(3)(ii)	Equipment deployment exercises...oil spill removal organization equipment.	Annex 5
(a)(4)	Emergency procedures exercises (optional)	

ANNEX 9..... COMPANY EMERGENCY PLAN AND REPORTING PROCEDURES

9.1..... CORPORATE EMERGENCY REPORTING

9.1.1..... Guidelines

Houston Office personnel and appropriate affiliates are to be promptly notified and be kept informed of unusual events and reportable incidents occurring at our marketing facilities or involving Motiva owned product or property handled or operated by others. This procedure must be carefully followed to ensure that Headquarters personnel receive the required information. Information on how to effectively communicate with the news media during an emergency situation is provided in Annex 3.b.2.

9.1.2..... Reporting Incidents Internally

To report incidents internally, take the following actions:

1. If the situation warrants potential use of resources from Emergency Management, Preparedness, and Response (EMP&R), call their 24 hr. hotline immediately at (877) 242-7400 to report incidents. When notification is made to or assistance is requested from Emergency Management, Preparedness, and Response (EMP&R), notification information should be documented on the EMP&R Notification Log.

Collect the information requested on the Spill Response Notification Form (located in the Core Plan) prior to calling the Emergency Management, Preparedness, and Response Team.

2. Contact the Regional Manager and the Manager, LSDR/HSE and Emergency Management within 24 hours (7 days a week).
3. If the reportable event involves a spill or an impact to the community, a written event investigation report (Investigation Report*) will be provided, within 10 calendar days, to the Regional Manager and the Manager, LSDR/HSE and Emergency Management.

***NOTE:** Exceptions to the Investigation Report will be made for sensitive matters which may need to be investigated under the attorney-client work product privilege. Contact Legal immediately where circumstances warrant. Advise the above contacts accordingly. On rare occasions an incident (e.g., certain process safety incidents) may require additional time to complete the investigation. The Manager, LSDR/HSE and Emergency Management is authorized to extend the reporting requirements where appropriate.

The event Investigation Report should address the facts of the matter and specifically discuss what preventative steps will be taken to help prevent a similar occurrence. The report should provide sufficient detail to enable others to learn from the experience.

Other reportable environmental events will not require a written follow-up report unless specifically requested.

4. For environmental incidents that are reportable to the National Response Center (NRC) pursuant to various federal laws, notify NRC at 1-800-424-8802 upon discovery of the environmental incident. If required by law, you must also contact local and State agencies in a timely manner to report certain environmental incidents.
5. Fatalities or incidents resulting in the hospitalization of three (3) or more Motiva employees must be initially reported orally by telephone or in person to the nearest OSHA area office within eight hours. Facilities can either call the nearest OSHA area office or call the OSHA 24-hour toll free telephone number at 1-800-321-OSHA (6742). The report must relate the circumstances of the accident, the number of fatalities and hospitalizations, and the extent of any injuries. The OSHA area director may require additional reports, in writing or otherwise, concerning the accident. Although the regulation does not require the employer to confirm in writing the oral or in person report to OSHA, Motiva facilities should work with the Motiva Legal Department to prepare a confirmation letter to send to OSHA.

9.1.3..... Incident Investigation

Investigation of incidents qualifying for emergency reporting should be coordinated with the Law Department. Do not delay required regulatory or insurance company reporting.

Subject to the requirement to coordinate incident investigations with the Law Department for environmental incidents, injury accidents, and property damage / product loss, a full Incident Report detailing the known factors, confirmed causes, costs, and actions taken to address the incident must be submitted to the Houston Office within ten (10) working days of the start date of an incident investigation that does not require any testing, sampling, or other activities that require more than 10 working days to complete. For incident investigations that require testing, sampling, or other activities that cannot reasonably be completed in ten (10) working days, the incident report must be submitted within thirty (30) working days of the start of date of the incident.

9.1.3.1.... Environmental

Environmental incidents should be reported if any one of the following conditions is present:

1. Any spill, discharge, or migration that threatens significant ecological damage or poses a threat to employee or public welfare.
2. Any incident that may have serious legal repercussions, such as the threat of legal action against the Company or an employee, the imposition of a significant penalty, or cleanup operations being taken over by a governing agency.
3. Any significant or potential side effects such as hazardous materials, petroleum products, or chemicals reaching a drinking water source, entering a public sewer system, or entering into basements of buildings or homes.
4. Any significant public reaction or news media coverage which has or may reflect on the Company's reputation.

9.1.3.2.... Accidents, Property Damage, Security, and Unfavorable Publicity

The following incidents should be reported:

Injury accidents (employees, contractors, or third parties) requiring hospitalization or a fatality.

Property damage, product loss, or other unusual happening (fires, explosions, power failures) where the losses or costs are expected to exceed \$50,000.

Any act of criminal violence resulting in serious injury or fatality, bomb threats, death threats, group demonstrations, wildcat strikes, or unexpected picketing, whether actual, threatened or potential, that could impact on Company operations, facilities, or personnel.

Any incident or event likely to result in significant unfavorable public reaction or news media coverage that is not covered within other categories.

9.1.4..... Handling the News Media

Motiva seeks to be a cooperative, forthright, and a responsible corporate citizen. In keeping with this, it is our goal to keep the public informed in the event of an emergency involving the safety of individuals or property.

9.2..... EMP&R NOTIFICATION LOG

Person on the EMP&R staff to whom you relayed this emergency information:

Name: _____

Phone: (____) _____

Time: ____:____ AM or PM (circle one) Time Zone: EST or CST

Document any calls or actions that you take in regard to this Emergency Call
(including calls where you leave a message):

Follow-up call:	Time Called:

Follow-up call:	Time Called:

Follow-up call:	Time Called:

Follow-up call:	Time Called:

9.3..... LOCAL EMERGENCY PLAN

9.3.1..... General Emergencies and Disasters

9.3.1.1.... Introduction

The objective of this Plan is to prepare for a general emergency and in so doing provide for the safety of Company personnel, protect Company property, and maintain the ability to continue operations.

9.3.1.2.... Authority to Activate Plan

This Plan may be activated by the designated Qualified Individual or the designated Alternate Qualified Individual. The individual activating the Plan shall assume responsibility for its complete execution until such time as relieved by higher authority.

9.3.1.3.... Emergency Agencies and Control Center

When deemed necessary, persons listed on the emergency notification phone list (Core Plan 1.1.2) may be summoned.

9.3.2..... Natural Disasters

9.3.2.1.... Floods

Floods may result from an unusually heavy rain following a long period of wet weather or a sudden spring thaw with, or without, rainfall. They may be caused by hurricanes with heavy rainfall and exceptionally high tides in coastal areas. Tidal waves may also flood coastal areas or areas adjacent to large inland lakes. Generally, there is ample advance warning of these conditions and as warranted, the following preparations should be considered:

1. Disconnect the main electrical switch, shut the main valve in the gas service line and water line, if any. Determine whether connections on sanitary sewer would be blocked to prevent back up (storm sewer drains should not be blocked).
2. Clear the yard of all loose items that could float away. Store empty drums inside a building and secure them against floating. Underground tanks in yard storage should be filled with water or otherwise anchored to prevent floating and sealed to prevent product or other contaminate from escaping.
3. Store carton packages above anticipated flood level or remove them to a safe place.
4. Remove motors and other electrical equipment and store them above anticipated flood level.

5. Remove automotive equipment, including forklift trucks and other motorized portable equipment, to a safe place.
6. Make sure that vertical tanks and large pipelines (8" and over) are filled, preferably with product. Safety requires maintaining the product level in the tanks at least 10" above the highest anticipated flood level. If sufficient product is not available, water should be used. However, **water should be admitted to the tanks and lines only as a last resort**, and only in sufficient quantities to keep ahead of the flood rise. Horizontal tanks that would be below flood-water level should be filled and anchored.
7. Close and lock product line valves.
8. Consideration should also be given to protection of Company funds and records. If deemed necessary on account of expected high water, valuable papers and funds should be removed from the safe to be stored elsewhere for safekeeping.
9. If possible, file cabinets should be elevated to a height above the expected flood level. If this is not possible, the contents of the file drawers that are subject to flood damage should be removed, tied securely in bundles and stored temporarily at a height above the expected high water level. In the same manner, see that correspondence and records in desk drawers are removed if in danger of loss or damage.
10. Pump out the oil collection compartment of open-top oil / water separators so flood waters do not impact the compartment causing a release to the lands or waters.

9.3.2.2.... Hurricanes

In the event of an approaching hurricane, the following precautions should be taken:

1. Clear the yard area of all loose items, empty drums, etc., that blow around and cause further damage.
2. Close all doors and windows.
3. Tape and / or board up windows and brace large windows.
4. Brace all large outside doors securely.
5. Small diameter (10' to 12') vertical or horizontal tanks should be at least half filled with product. If product is low, water should be added, only as a last resort.

6. Take precautions as listed above for impending flood if hurricane warnings indicate this emergency.

9.3.2.3.... Tornadoes

Generally, there is little warning of tornado conditions, from 15 minutes to an hour and a half. However, insofar as time permits, the same preparation should be made as indicated above for hurricanes, giving preference in the order listed. A tornado may follow a period of intense ground heat. The first indication of its approach may be a combination of thick dark storm clouds and heavy rainfall or hail. When such signs appear in tornado areas, it is important to maintain contact with local weather reporting agencies.

9.3.2.4....Earthquakes

Brooklyn is in Zone 2 - Moderate Damage Area.

9.3.2.5.... Cleanup

After any emergency has passed, facilities should be returned to operating condition as soon as possible. However, in doing so, certain precautions should be observed:

1. Do not touch loose wires under any circumstances until they have been checked out by a qualified electrician. They may be electrically charged.
2. Do not turn on main electrical switch until the entire system has been checked out (if any part was flooded) by a qualified electrician.
3. Do not operate any electrical equipment until thoroughly dried out and checked (if flooded) by a qualified electrician.
4. Check thoroughly all product lines and tanks for leaks or any other evidence of damage.
5. Check entire Facility for possible damage.
6. Prepare accident report, if necessary.

9.3.3..... Media

All contact with the press or other media will be made by the Complex Manager or a Motiva Communications Representative listed in the Core Plan. All contacts should adhere to the Company's public policy statements and follow existing guidelines.

9.3.4..... Emergency Oversight

When this Plan is activated, the Complex Manager will direct all "outside" activities and all "inside" activities. Those handling administrative duties will stand ready to secure and protect the Company funds and records, and stand ready to assist as directed by the Complex Manager. The Terminal Operator on duty will act as telephone coordinator and liaison with Emergency Agencies.

9.3.5..... First Aid

Local Emergency Medical Services will be contacted by calling 911. If required, a First Aid Station will be established in the Terminal Office.

9.3.6..... Special Matters

9.3.6.1.... Criminal Complaints and Arrests

Under long-standing Company policy no employee, on behalf of the Company, may sign a criminal complaint, institute a criminal action or cause the arrest of anyone unless prior approval of the Legal Department has been obtained. Of course, if a Federal or State Law Enforcement officer desires to sign the complaint or file charges in accordance with his statutory authority and duty, he should be encouraged to do so.

9.3.6.2.... Subsequent Investigations

All contacts with investigating authorities during their subsequent investigations of these types of emergencies should be made only through the Company's Security Representatives. Therefore, any inquiries made by public authorities in connection with any post investigations should be referred to them. However, personnel should cooperate in developing for the Security Representatives any information they may deem to be desirable to furnish the investigating authorities.

9.3.6.3.... Conduct of Employees

Emphasis should always be on the side of preventing undesirable publicity; and, except in self-defense:

***NO PHYSICAL FORCE SHOULD BE USED AGAINST OTHER PERSONS AT ANY
TIME!!***

9.3.6.4.... Bomb Threat Checklist

Name Of Person Receiving Threat		Title	Phone No.
Date Threat Received	Time Threat Received	Reported To	Phone No.

QUESTIONS TO ASK

EXACT WORDING OF THREAT

1. When is the bomb going to explode? _____
2. Where is it right now? _____
3. What does it look like? _____
4. What kind of bomb is it? _____
5. What will cause it to explode? _____
6. Did you place the bomb? _____
7. Why? _____
8. What is your name? _____
9. What is your address and phone? _____

The following require opinions, perceptions and judgments. Please give your first impression.

Caller was:	<input type="checkbox"/> Male	<input type="checkbox"/> Female	<input type="checkbox"/> Adult	<input type="checkbox"/> Child
Estimated age:	<input type="checkbox"/> Pre-teen	<input type="checkbox"/> Teenage	<input type="checkbox"/> 20-40	<input type="checkbox"/> Other
Caller's Speech:	<input type="checkbox"/> Accent	<input type="checkbox"/> Heavy	<input type="checkbox"/> Slight	<input type="checkbox"/> Other
	<input type="checkbox"/> Spanish	<input type="checkbox"/> German	<input type="checkbox"/> German	<input type="checkbox"/> Other
	<input type="checkbox"/> Southern	<input type="checkbox"/> Northern	<input type="checkbox"/> New York	<input type="checkbox"/> Other
Caller's Voice:	<input type="checkbox"/> Fast	<input type="checkbox"/> Slow	<input type="checkbox"/> Excited	<input type="checkbox"/> Angry
	<input type="checkbox"/> Slurred	<input type="checkbox"/> Quite	<input type="checkbox"/> Nasal	<input type="checkbox"/> Slang
	<input type="checkbox"/> Impediment	<input type="checkbox"/> Well Spoken	<input type="checkbox"/> Other	
Background Sound:	<input type="checkbox"/> Animals	<input type="checkbox"/> Railroad	<input type="checkbox"/> Aircraft	<input type="checkbox"/> Street
	<input type="checkbox"/> Other (describe)			

9.4..... DEMONSTRATIONS

9.4.1..... Introduction

Security procedures to be activated in respect to demonstrations have three objectives:

1. Protection of Company employees and property.
2. Protection of business visitors and their property.
3. Continuity of operations.

In the Company's performance of service to the public, constructive communications are encouraged, but communications which take the form of group demonstrations conducted on Company property not only are not constructive but pose a serious threat to the personal safety of employees and probable harm to Company property.

Since these demonstrations could come at any time, with or without warning, to effectively cope with such an emergency, a threat plan of action for each Company facility must be placed in readiness. Guidelines for the development of a plan to meet this type of emergency, including an outline of the actions to be taken, are set out below.

9.4.2..... Authority to Activate Plan

This Plan may be activated by the designated Qualified Individual or the designated Alternate Qualified Individual.

The individual placing the Plan into effect will remain responsible for all activity until relieved by higher authority. Exercising good judgment and without over-reacting, the individual activating the Plan will take all measures necessary to accomplish the three objectives first mentioned.

The highest local authority present, or the Complex Manager if present, will act as Company spokesperson in the event a meeting with the demonstrators is indicated. He / she shall be familiar with Company's public policy statements and the Emergency Reporting Procedures.

The highest local authority present, the Complex Manager or the Motiva Enterprises LLC Communications Representative, will act as spokesperson with the media.

9.4.3..... Emergency Agencies

When deemed necessary, persons listed on the emergency notification phone list (Core Plan, Section 1.1.2) may be summoned.

9.4.4..... Notification

Any individual observing or receiving notice, verbal or written, of an actual or proposed demonstration shall immediately notify the QI/AQI or the Senior Terminal Operator.

If received or noted after hours, and after consideration of first protecting Company employees and forestalling damage to property, every effort will be made to notify the above by telephone.

All employees in the Facility will be notified in person of what action is being taken and what countermeasures, if any, should be taken. If it becomes necessary to evacuate the Facility, a communications post will be established by the Complex Manager and employees may call there for current instructions.

A Control Center will be established in the Terminal Office, if possible. All activities will be directed by the senior person in charge from the Control Center.

9.4.5..... Action Steps

9.4.5.1 Entrances

If time allows, all entrances to the Facility, except one, should be locked or blocked so that the demonstrators will be required to enter through only one door. However, predesignated personnel with keys should be posted at all such locked entrances so that all doors may be quickly opened if personnel evacuation becomes necessary.

9.4.5.2 Dangerous Materials

Gates to all fenced areas should be locked and employees positioned where they can warn of points where flammable or other dangerous materials are kept.

9.4.5.3 Alerting Personnel

All personnel in the Facility should be alerted and kept advised of all developments by the communication means set out in the Plan.

9.4.5.4 Restricted Areas

Company and other selected personnel will be stationed at every building door, entrance / exit gate, and the truck loading rack (if remote from the office) and advise non-employees that the area is not open to the public. However, no physical force should be used to restrain or resist outsiders.

9.4.5.5.... Files and Desks

If it appears that the protest or demonstration may become unruly or access to restricted areas may be attempted, all desks should be cleared and all desks, files and cabinets locked as directed by the person in charge.

9.4.5.6.... Fire Equipment

Personnel shall be prepared to take up positions where they will be able to readily man hand held fire equipment only. If necessary, the local Fire Department will be summoned by calling 911 by Facility personnel, as directed by the Fire Emergency Plan.

9.4.5.7.... First Aid

Local Emergency Medical Services will be contacted by calling 911. If required, a First Aid Station will be established in the Terminal Office.

9.4.6..... Instructions for Contact with Demonstrators

9.4.6.1.... Clarification

At the outset, the exact reason for and purpose of the groups visit should be requested and such information conveyed immediately to the person in charge.

9.4.6.2.... Restrict to Lobby

Efforts should be made to keep demonstrators outside of the Facility or, if they gain entrance, in the lobby or reception area - but by request only. Do not attempt to use force.

9.4.6.3.... Heckling

Do not debate with, taunt, heckle or harass protesters in any manner.

9.4.6.4.... Group Representatives

If possible, the group should be persuaded to designate one (or only a few) person to represent it and it should be suggested that the meeting be held in a separate closed room.

9.4.6.5.... Spokesperson Conduct

The Company spokesperson should always be accompanied by at least two other Company employees (if available), should decline to have his or her conversation recorded, should not pose for pictures, and should not express personal opinions. However, NO attempt to confiscate cameras, film, recorders or any personal articles should be made. The spokesperson should listen courteously, engage in no debate, and answer questions only in terms of authorized Company statements. NO MORE.

9.4.6.6.... Unruly Demonstrations

If the demonstration becomes disruptive or if the group refuses to leave after the Company spokesperson considers the interview at an end, the police should be summoned to the Facility. The Company employee in charge of the emergency should then decide whether the disruptive actions are of such severity as to warrant a request for removal by the police.

9.4.6.7.... Evacuation

If demonstrators begin to intentionally damage or destroy Company property, Company personnel are to be immediately evacuated from the affected area and police action should be immediately requested to protect persons and property.

9.4.6.8.... Criminal Complaints and Arrests

Under a long-standing Company policy, no employee, on behalf of the Company, may sign a criminal complaint, institute a criminal action or cause the arrest of anyone unless prior approval of the Legal Department is obtained. Of course, if a Federal or State Law Enforcement Officer desires to sign the complaint or file charges in accordance with his statutory authority and duty, he should be encouraged to do so.

9.4.6.9.... Restraint by Employees

Emphasis should always be on the side of avoiding provocation or disturbance and preventing undesirable publicity. Except when self-defense becomes necessary, NO PHYSICAL FORCE SHOULD BE USED BY EMPLOYEES AT ANY TIME.

**COMMON SENSE, CALMNESS AND DISCRETION SHOULD PREVAIL
AT ALL TIMES!!**

9.5..... FIRE EMERGENCY PLAN

9.5.1..... Introduction

The objective of this Plan is to prepare for a fire emergency and in so doing, provide for the safety of Company personnel, protect Company property, and maintain the ability to continue operations.

Facility personnel will take no action or risk to themselves or other to fight a fire, except when the fire is in the incipient stages where hand-held fire extinguishers may be used by Facility personnel.

Facility personnel will not endanger themselves or others in any way.

No employee shall enter a burning building to fight a fire.

9.5.2..... Authority to Activate Plan

This Plan may be activated by the designated Qualified Individual, the designated Alternate Qualified Individual or any other Facility employee. The individual activating the Plan shall assume responsibility for its complete execution until such time as relieved by higher authority.

9.5.3..... Emergency Agencies and Control Center

When deemed necessary, persons listed on the emergency notification phone list (Core Plan, Section 1.1.2) may be summoned.

9.5.4.....In the Event of a Fire

The person observing the fire will sound the nearest alarm and notify the Terminal Office to notify the local Fire Department by calling 911.

All truck loading at the truck loading rack will cease.

Facility personnel will direct the evacuation of all trucks to a safe location outside of the Facility facility. All drivers will remain with their trucks. If starting vehicles will present an ignition hazard, vehicles will not be moved.

If the fire is at the truck loading rack, Facility personnel will stand by the foam system control actuator and initialize the foam system if the automatic system for the loading rack should fail.

If a Facility employee is on duty, providing that it is safe to do so, a Facility employee will close all tank and pipeline valves and shut off all power to the product pumps.

Facility personnel will ensure that all of the entrance / exit gates are open for emergency vehicles.

Facility personnel, as may be available, will be assigned to the entrance / exit gates to deny access to anyone other than emergency vehicles (Police, Fire, and Ambulance). Without placing themselves in danger, Facility employees may assist emergency response vehicles stopping traffic on East Avenue to allow entrance / exit of trucks and emergency vehicles to / from the Facility.

All non-Company personnel will be directed to leave the Facility taking their personal vehicles with them, if safe to do so.

Facility personnel and / or selected individuals arriving at or returning to the Facility will report to the Qualified Individual for instructions. The QI will be the designated liaison with the Fire Department.

If possible, company funds and / or records will be secured or removed from the Facility to a safe location.

If possible, a Facility employee or selected individual will handle all telephone traffic.

9.5.5.....Fire Evacuation Plan

A detailed Facility evacuation plan and Evacuation Diagram is located in the Core Plan and in Annex 1. The diagram depicts the location of the emergency evacuation routes, fire extinguishers, and fire alarm pull stations.

9.5.6.....Fire Safety Equipment

9.5.6.1.....Fire Alarm Switches

See diagrams in Annex 1.

9.5.6.2.....Truck Loading Rack Foam System

The truck loading rack is protected by a foam system that is activated automatically by fire sensor equipment located on the under side of the loading rack roof.

The truck loading rack foam system may be activated manually from the Terminal Operator's office or from the foam room.

9.5.6.3.....Tank Farm Foam System

Each tank in the tank farm is protected by a foam system that is activated manually with zone control. To activate, the Operator must open the appropriate foam valve that corresponds to the tank and turn on the foam pump.

9.5.6.4.....Portable Fire Extinguishers

Portable fire extinguishers are located at various locations throughout the Facility. A location listing is found in the Core Plan.

9.5.6.5.....Fire Blankets

There are fire blankets located on each lane of the loading rack, one at the pump off station, two in the shop and one in the warehouse.

9.5.7 Predetermined Reassembly Locations

If it becomes necessary to evacuate the Facility due to imminent danger, all Facility employees, contractors, drivers, and visitors will safely and quickly proceed to the "Fire Drill Area" located between the main office and warehouse. All employees and visitors will be accounted for by the designated person in charge. All employees and visitors will remain in this area until directed otherwise by the designated person in charge.

COMMON SENSE SHOULD PREVAIL AT ALL TIMES

BE CALM AT ALL TIMES - DO NOT RUN - DO NOT PANIC

Follow the instruction from the designated person in charge or from such civil authorities that are on the scene

ANNEX 10... STATE REQUIREMENTS

ANNEX 10

NEW YORK SPILL PREVENTION REPORT (6NYCRR 598.1(k))

TABLE

	Pursuant to <u>598.1</u>	<u>Section</u>
General Information		
Current Registration Application and Certificate	(k)(2)i	Annex 10, Attachment 1
Management Approval and Certification	(k)(2)ii	Annex 8, Section 8.2.3
Name & Signature of qualified person who prepared the Report (NYS Professional Engineer or Qualified Person)	(k)(2)iv	Annex 10, Attachment 2
Facility Map		
Locations and identification of tanks, transfer stations & piping	(k)(2)iii	Annex 1
Summary of Releases During Past Five Years	(k)(2)v	Annex 4, Section 4.2
Identification and Assessment of Causes of Releases	(k)(2)vi	Annex 7, Section 7.1
Compliance Status	(k)(2)vii	Annex 10, Attachment 3
Inspections	(K)(2)viii	Inspection Program described in Annex 7, Section 7.5.4, 7.7.1, 7.7.2, 7.7.3
General		
Daily		Start of Shift Checklist and SPCC Checklist located at the end of Annex 7
Monthly		Monthly inspections are performed, although not required under this section
Annual		(1) Annual inspections of cathodic protection systems are performed and maintained in a separate report. Reports are maintained on site (2) Tanks, secondary containment systems, and equipment are inspected daily – See Forms in Annex 7
Five-Year		Five-Year inspection records maintained on site
Financial Responsibility (If applicable)	(k)(2)ix	N/A – will be provided to NYSDEC upon request

Spill Response Plan	(k)(2)x	Core Plan, Annexes 1, 2, 3, 4, 5, 7, 8 & 9
Discussion and Assessment of Equivalent Equipment, Method, or Practice (If applicable)	(k)(3)	N/A
Site Assessment and Findings (If applicable)	(k)(4)	N/A
Spill Reporting Form		Core Plan, Section 1.1.3
Written Procedures for the Prevention of Mixing of Incompatible Substances (If applicable)	598.4(b)(7)	N/A – Storage/handling of petroleum products and fuel additives does not present a compatibility concern under this section (all materials are compatible)

ATTACHMENT 1

REGISTRATION APPLICATION AND RECERTIFICATION

ATTACHMENT 2

SPILL PREVENTION REPORT (SPR) CERTIFICATION

I certify that I have acquired, through education and/or related practical experience, knowledge of the physical sciences, technology and principles of storing and handling hazardous substances as it relates to this Facility.

I have examined the Facility, and being familiar with the provisions of 6 NYCRR Parts 595, 596, 597, 598, and 599, attest that this Spill Prevention Report has been prepared in accordance with requirements therein.

James W. Lintz

Name of Qualified Person

Signature of Qualified Person

Date: _____

ATTACHMENT 3

**SAMPLE
COMPLIANCE STATUS CHECKLIST**

11 LOCAL REQUIREMENTS

Attachment 1

Attachment 2

Attachment 3

11.1 OSRO Classifications

OSRO contracts

AMPD Checklist

11.2 Response Team Job Description

11.3 Material Safety Data Sheets



New York State Department of Environmental Conservation
CHEMICAL BULK STORAGE CERTIFICATE
625 Broadway, 11th Floor, Albany, NY 12233-7020 Phone: 518-402-9553

Region 2
One Hunters Point Plaza, 15th Floor
47-40 21st Street, L.I. City, NY 11101-6454
(718) 482-6454

TANK NUMBER	DATE INSTALLED	TANK LOCATION AND TYPE	CAPACITY (GALLONS)	HAZARDOUS SUBSTANCE	% HAZ SUBST	CHEMICAL ABSTRACT #
10	01/01/1945	AST - Steel/Carbon Steel/Iron	10,000			
51	10/01/1990	AST - Steel/Carbon Steel/Iron	5,000	XYLENE (MIXED)	3.00	1330-20-7
52	12/01/1990	AST - Steel/Carbon Steel/Iron	4,000	XYLENE (MIXED)	17.00	1330-20-7
54	10/01/1993	AST - Steel/Carbon Steel/Iron	5,014	XYLENE (MIXED)	17.00	1330-20-7
9	04/01/1945	AST - Steel/Carbon Steel/Iron	10,000	XYLENE (MIXED)	17.00	1330-20-7
				XYLENE (MIXED)	27.00	1330-20-7

OWNER:
MOTIVA ENTERPRISES, LLC
1100 LOUISIANA STREET, SUITE 2200
HOUSTON, TX 77002

OPERATOR: MOTIVA ENTERPRISES LLC
(718) 383-4066
EMERGENCY JAMES W. LINTZ
CONTACT: (718) 383-4066

ISSUED BY: Commissioner
Alexander B. Grannis
CBS NUMBER: 2-000209
DATE ISSUED: 11/03/2008
EXPIRATION DATE: 11/30/2010
FEE PAID: \$ 625.00

SITE:
MOTIVA ENTERPRISES LLC
25 PAIDGE AVENUE
BROOKLYN, NY 11222

MAILING CORRESPONDENCE:

JAMES W. LINTZ
MOTIVA ENTERPRISES LLC
25 PAIDGE AVENUE
BROOKLYN, NY 11222

As an authorized representative of the above named facility, I hereby certify that the information on this form is true and correct. Additionally, I recognize that I am responsible for assuring that this facility is in compliance with all sections of ECL Article 40 and 6 NYCRR Parts 595, 596, 597, 598, and 599, not just those cited below:

- The facility must be re-registered if there is a transfer of ownership.
- The facility has maintained its requirements relating to daily, monthly, annual and five year inspections as required by Part 598.7 and has its SPR annually updated as required by Part 598.1(k).
- The Department must be notified within 3 business days prior to adding, replacing, reconditioning, or permanently closing a stationary tank.
- This certificate must be signed and posted on the premises at all times. Posting must be at the tank, at the entrance of the facility, or the main office where the storage tanks are located.
- Any person with knowledge of a spill, leak or discharge must report the incident to DEC within two hours (1-800-457-7362).

James W. Lintz 11-10-2008
Signature of Representative/Owner Date
James W. Lintz, Metropolitan Complex Mgr.
Name and Title of Authorized Representative/Owner (Please Print)

Print Date: 11/3/2008

THIS REGISTRATION CERTIFICATE IS NON-TRANSFERABLE

Page 1 of 1

Shell/Motiva 0008763

NEW YORK STATE CHEMICAL BULK STORAGE INSPECTION REPORT

Rev. 8/28/06
Cbcklist 2005

CBS# 2 -000 209 or ☐ Unregistered Inspection number _____ Date 10/20/2010

Site Name <u>Motiva Enterprises LLC - Brooklyn Terminal</u> Site Address <u>25 Paldge Ave, Brooklyn, NY 11222-1281</u> Site Contact <u>Frank Signoriello</u> Phone Number <u>718-383-4066, ext 12</u> Fax Number <u>718-383-7970</u> Email Address <u>Frank.Signoriello@Motivaent.com</u>	Owner Name <u>Motiva Enterprises LLC</u> Owner Address <u>1100 Louisiana St, Ste 2200</u> <u>Houston, TX 77002</u> Owner Contact <u>James Lintz</u> Phone Number <u>718-383-4066</u> Fax Number <u>718-383-7970</u> Email Address <u>James.Lintz@Motivaent.com</u>
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1. Visitor parking 2. Centroid

of site **Map Datum**

GIS: E _____ N _____ **Location** 3. At AST 4. At UST 5. Main Gate ☒ NAD83

SITE Representative James Lintz, Frank Signoriello

NYSDEC Inspector Self-assessment

I. GENERAL

	YES	NO	X
1. All regulated tanks at this site are registered [§596.2(a)]?	Y		
2. Is the registration certificate posted at the facility [§596.2(g)]?	Y		
3. Is registration information current & correct [§596.2(f)]?	Tank 52 should be removed		

II. SPILL PREVENTION REPORT (SPR)

	YES	NO	X
A. Preparation of the SPR			
4. Does facility have an SPR [§598.1(k)(1)]? Y/N Date: _____	Incorporated in ICP, last update 10/2010		
5. Has SPR been updated annually or Whenever a significant release occurred or When a substantial modification was made. Y/N/X	Y		
6. Does the SPR contains a copy of current registration application & certificate. [§598.1(k)(2)(i)]? Y/N	Y		
7. Current approval of management [§598.1(k)(2)(ii)]? Y/N	Y		
8. Current site map [§598.1(k)(2)(iii)]? Locate/identify tanks, transfer stations, connecting piping Y/N	Y		
9. Preparer's name and signature [§598.1(k)(2)(iv)]? Y/N	Y		
10. Listing and description of spills for past 5 years [§598.1(k)(2)(v)]? Y/N	Y		
11. An assessment of causes of spills, leaks, and releases for past 5 years §598.1(k)(2)(vi)]? Y/N	NA NO SPILLS IN 5 YRS		
12. SPR contain a spill response plan [§598.1(k)(2)(x)]? Y/N/1 (incomplete)	Y in ICP		
B. Periodic Inspections of Tank/Piping and Record keeping §598.1(k)(2)(viii) , §598.6 & §598.8]			
13. Is weekly monitoring performed between the tank/pipe and the secondary containment system for: a. UST [; §598.6(b)(2)]? Y/N/X	NA no USTS		

b. Underground piping [§599.15(b); §598.6(c)(1); §598.5(a)]? Can be in combination with: inventory with annual tightness test; vapor wells; gw wells; auto tank gauging; equiv. Y/N/X	NA no underground piping		
14. UST Systems - Monthly Inspections Monthly visual is performed [§598.6(a)(1)]? Y/N/X/1 (records not retained for 10 yrs §598.8(a))/2 (report signed, dated, certified §598.8(b))/3 (records not in SPR)/4(operability)	NA no USTS		
15. AST Monthly (≥10% volume beneath ground) [§598.7(b)] a. Aboveground tank - Monthly leak detection is performed [§598.7(b)]? Y/N/X/1 (records not retained for 10 yrs §598.8(a))/2 (report signed, dated, certified §598.8(b))/3 (records not in SPR)	Y records on file at terminal		
b. Underground piping - Monthly leak detection is performed [§598.6(c); §598.7(b); §599.15(b)]? Y/N/1 (records not retained for 10 yrs §598.8(a))/2 (report signed, dated, certified §598.8(b))/3 (records not in SPR)	NA no underground piping		
16. UST Systems - Annual Inspections [§598.6(a)(2)] Date: _____ a. Automatic Line Leak Detector? Y/N(not performed)/1(no records in SPR)/2(records not retained 5 yrs)/3(no cert.)/4(not operational)	NA no USTS		
b. Cathodic Protection System for Tanks? Y/N/X(not performed)/1(no records in SPR)/2(records not retained 5 yrs)/3(no cert.)/4(not maintained to achieve protection)	NA no USTS		
c. Cathodic Protection System for Piping? Y/N(not performed)/1(no records in SPR)/2(records not retained 5 yrs)/3(no cert.)/4(not maintained to achieve protection)	NA no underground piping		
17. AST Systems - Annual Inspections [§598.7] Date Completed: <u>10/20/2010</u> a. Aboveground Tank- (1) Visual inspections performed [§598.7(c)(2)]? Y/N/1 (records not in SPR)	Y		
(2) For tank subject to corrosion, cathodic protection system is inspected by qualified technician and is maintained to achieve protection [§598.7(c)(1); §598.8(a); §598.8(b) & §598.9]? Y/N (not performed)/ X(not in contact with soil)/1(no records in SPR)/2 (records not retained 5 yrs)/3 (no cert.)/4 (not maintained to achieve protection)	Not in contact with soil		
b. Aboveground Piping - (1) Visual inspections performed [§598.7(c)(2)]? Y/N/1 (records not in SPR)	Y		
(2) For piping subject to corrosion, cathodic protection system is inspected by qualified technician and is maintained to achieve protection [§598.7(c)(1); §598.8(a); §598.8(b) & §598.9]? Y/N(not performed)/ X(not in contact with soil)/1 (no records in SPR)/2 (records not retained 5 yrs)/3 (no cert.)/4 (not maintained to achieve protection)	Not in contact with soil; entire terminal system is inspected annually		
18. AST Systems - 5-year Inspections [§598.7(d)] Date: <u>10/1/08</u> Aboveground tanks and piping must undergo a 5-year inspection in accordance with a consensus code, standard, or practice. An assessment & evaluation must be made of structural soundness, system tightness, corrosion, wear, foundation weakness & operability. Reports are dated, signed, & certified [§598.8(b)] & records are maintained for 10-year period [§598.8(a)]. For tanks > 10,000 gal, the inspection is certified by a NYS-licensed professional engineer. The remaining life expectancy must be determined. a. Aboveground tanks? Y/N/X/1 (not in accordance with code)/2 (no assessment)/3 (no cert)/4 (records not retained 10 yrs)/5 (no cert. for tank > 10,000 g)/6 (records not in SPR)	5 yr Tank inspection reports on file at terminal		
b. Aboveground piping? Y/N/X/1(not in accordance with code)/2(no assessment)/3(no cert)/4(records not retained 10 yrs)/5 (records not in SPR)	Y		

19. UST Inspection - Reconditioned Tanks With Liners [§598.6(d)]? Y/N (not inspected internally)/X/ 1 (not performing to design specs)/ 2 (no assessment)/ 3 (no cert.)/ 4 (records not retained)/ 5 (records not in SPR)	NA no USTs		
20. Facility report on status of compliance [§598.1(k)(2)(vii)]?	Inspection reports		
C. Tank & Piping Certifications (Apply to tanks installed on or after 2/11/95) 21. Does the SPR contain a certification statement for design and installation of tank and piping systems - a. USTs [§599.6(g)(4)& (5)]? Y/N/ X (no USTs)/1 (record not available)/2 (no records for 5 yrs)/3 (records not in SPR)	NA tanks installed prior to 1995 X, no USTs		
b. ASTs [§599.11(f)(4) & (5)]? Y/N/ X (no ASTs)/1 (record not available)/2 (no records for 5 yrs)/3 (records not in SPR)	NA tanks installed prior to 1995		
c. Piping [§599.16(e)(3)&(4)]? Y/N/1 (record not available)/2 (no records for 5 yrs)/3 (records not in SPR)	NA tanks installed prior to 1995		
D. Life Expectancy/Warranty 22. UST secondary containment liner - liner life expectancy is specified in the SPR [§599.4(d)]? Y/N/X	NA		
23. Useful life for UST tank design, if < 30 years, is specified in the SPR [§599.3(c)(1)]? Y/N/X	NA		
24. Useful life for AST tank design, if < 30 years, is specified in the SPR [§599.8(b)(1)]? Y/N/X	NA		
25. Piping life expectancy is specified in the SPR? [§599.13(a)(1)]? Y/N	NA		
E. Additional Requirements			
26. Are rupture disks replaced			
a. Every 3 years, Y/N (no option selected)/X			
b. According to manufacturer's guidelines, Y/N (no option selected)/X			
c. On the basis of operating experience [§598.9(f)]? Y/N (no option selected)/X	Y		
27. Does SPR contain a site assessment for UST, or AST with ≥10% volume beneath ground, for { closure [§598.10(e)] }; { change-in-service [§598.10(a)(2)] } or { when directed by the department [§598.1(g)(3)] } Y/N/X (not applicable)/1 (inadequate)/2 (not in SPR, §598.1(k)(4) & §598.10(e)(4))	NA, no USTs		
28. If facility have written procedures to prevent deliveries to the wrong tank, are they referenced in SPR [§598.4(b)(7)]? Y/N/X (single tank with no other fill ports, or facility has mated connections)	X, in Terminal Operation Manual		

III. TRANSFER STATIONS & HAZARDOUS SUBSTANCE TRANSFERS

YES

NO

X

29. <u>Transfer station</u> [§599.17(c)(2)]: Transfer stations must have a permanently installed secondary containment system. Containment system must have an acceptable spill containment volume; satisfy permeability to substance stored; constructed, coated, or lined with materials that are compatible with substance stored; and equipped with a sump and manually-controlled drainage system (must be locked closed). Y/X/N (no containment)/ 1 (not perm. installed)/ 2 (unacceptable cont. vol.)/ 3 (permeable)/ 4(not maintained)/5 (incompatible)/ 6 (no sump or lockable drainage valve)	Y		
To prevent mixing of incompatible substances: [§598.4(b)(7)] 30. Does the facility have written site procedures in SPR to prevent delivery to the wrong tank, fill ports with mated connections? Y/N/X (have written procedures, or facility has single tank of any type)	X, Terminal Operation Manual		

Attachment 3

11.1 OSRO Classifications, OSRO contracts, AMPD Checklist

The following pages include the updated OSRO Classifications, contracts/PREP, and a copy of the AMPD Checklist.

CONTRACTED RESPONSE RESOURCES CLASSIFICATIONS
Sector New York

USCG Classified Oil Spill Removal Organization (OSRO)							
OSRO Name	Response Time	Environment Type	Facility Classification Level				High Volume Port
			MM	W1	W2	W3	
Ken's Marine Services, Inc.	45 minutes	Rivers/Canals	x	x	x		Yes
		Inland	x	x	x	x	
Atlantic Response Inc.	1-1/2 hours	Rivers/Canals	X				
		Inland	X				
Clean Harbors Environmental Services Inc.	1 hour	Rivers/Canals	X	X	X	X	
Miller Environmental Group, Inc. (Land) Miller's Launch (Marine)	1 hour	Rivers/Canals	x	x	x	x	
		Inland	x	x	x	x	
Marine Spill Response Corporation (MSRC)	2 hours	Rivers/Canals	x	x	x	x	
		Inland	x	x	x	x	

USCG OSRO CLASSIFICATIONS (As of October 2002)

The USCG has classified OSROs according to their response capabilities, within each Captain of the Port (COTP) zone, for vessels and for facilities in four types of environments. Response capabilities are rated MM, W1, W2, or W3 as described below.

MINIMUM EQUIPMENT REQUIREMENTS FOR OSRO CLASSIFICATIONS						
Classification	Resource Quantity Guidelines ^{2,3}		Maximum Facility Response Times		Maximum Vessel Response Times	
Rivers/Canals ¹						
MM	Protective Boom:	4,000*ft				
	EDRC:	1,200 bbls	High Volume Ports:	6 hours	High Volume Ports:	12 hours
	TSC:	2,400 bbls	Other Ports:	12 hours	Other Ports:	24 hours
W ¹	Protective Boom:	25,000*ft				
	EDRC:	1,875 bbls	High Volume Ports:	12 hours	High Volume Ports:	12 hours
	TSC:	3,750 bbls	Other Ports:	24 hours	Other Ports:	24 hours
W ²	Protective Boom:	25,000*ft				
	EDRC:	3,750 bbls	High Volume Ports:	30 hours	High Volume Ports:	36 hours
	TSC:	7,500 bbls	Other Ports:	36 hours	Other Ports:	48 hours
W ³	Protective Boom:	25,000*ft				
	EDRC:	7,500 bbls	High Volume Ports:	54 hours	High Volume Ports:	60 hours
	TSC:	15,000 bbls	Other Ports:	60 hours	Other Ports:	72 hours
Great Lakes						
MM	Protective Boom:	6,000*ft				
	EDRC:	1,250 bbls				
	TSC:	2,500 bbls	All Ports:	6 hours	All Ports:	12 hours
W ¹	Protective Boom:	30,000*ft				
	EDRC:	6,250 bbls	High Volume Ports:	12 hours	High Volume Ports:	12 hours
	TSC:	12,500 bbls	Other Ports:	24 hours	Other Ports:	24 hours
W ²	Protective Boom:	30,000*ft				
	EDRC:	12,500 bbls				
	TSC:	25,000 bbls	All Ports:	36 hours	All Ports:	42 hours
W ³	Protective Boom:	30,000*ft				
	EDRC:	25,000 bbls				
	TSC:	50,000 bbls	All Ports:	60 hours	All Ports:	66 hours

USCG OSRO CLASSIFICATIONS (Cont'd) (As of October 2002)

The USCG has classified OSROs according to their response capabilities, within each Captain of the Port (COTP) zone, for vessels and for facilities in four types of environments. Response capabilities are rated MM, W1, W2, or W3 as described below.

MINIMUM EQUIPMENT REQUIREMENTS FOR OSRO CLASSIFICATIONS						
Classification	Resource Quantity Guidelines ^{2,3}		Maximum Facility Response Times		Maximum Vessel Response Times	
Inland ¹						
MM	Protective Boom:	6,000* ft				
	EDRC:	1,200 bbls	High Volume Ports:	6 hours	High Volume Ports:	12 hours
	TSC:	2,400 bbls	Other Ports:	12 hours	Other Ports:	24 hours
W ¹	Protective Boom:	30,000* ft				
	EDRC:	12,500 bbls	High Volume Ports:	12 hours	High Volume Ports:	12 hours
	TSC:	25,000 bbls	Other Ports:	24 hours	Other Ports:	24 hours
W ²	Protective Boom:	30,000* ft				
	EDRC:	25,000 bbls	High Volume Ports:	30 hours	High Volume Ports:	36 hours
	TSC:	50,000 bbls	Other Ports:	36 hours	Other Ports:	48 hours
W ³	Protective Boom:	30,000* ft				
	EDRC:	50,000 bbls	High Volume Ports:	54 hours	High Volume Ports:	60 hours
	TSC:	100,000 bbls	Other Ports:	60 hours	Other Ports:	72 hours
Nearshore						
MM	Protective Boom:	8,000* ft			High Volume Ports:	12 hours
	EDRC:	1,200 bbls	High Volume Ports:	6 hours	Other Locations:	24 hours
	TSC:	2,400 bbls	Other Locations:	12 hours	(for open ocean, plus travel time from shore)	
W ¹	Protective Boom:	30,000* ft				
	EDRC:	12,500 bbls	High Volume Ports:	12 hours	High Volume Ports:	12 hours
	TSC:	25,000 bbls	Other Locations:	24 hours	Other Locations:	24 hours
W ²	Protective Boom:	30,000* ft				
	EDRC:	25,000 bbls	High Volume Ports:	30 hours	High Volume Ports:	36 hours
	TSC:	50,000 bbls	Other Locations:	36 hours	Other Locations:	48 hours
W ³	Protective Boom:	30,000* ft				
	EDRC:	50,000 bbls	High Volume Ports:	54 hours	High Volume Ports:	60 hours
	TSC:	100,000 bbls	(for open ocean, plus travel time from shore)		(for open ocean, plus travel time from shore)	

USCG OSRO CLASSIFICATIONS (Cont'd) (As of October 2002)

The USCG has classified OSROs according to their response capabilities, within each Captain of the Port (COTP) zone, for vessels and for facilities in four types of environments. Response capabilities are rated MM, W1, W2, or W3 as described below

MINIMUM EQUIPMENT REQUIREMENTS FOR OSRO CLASSIFICATIONS							
Classification		Resource Quantity Guidelines ^{2,3}		Maximum Facility Response Times		Maximum Vessel Response Times	
Offshore							
MM	Protective Boom:	8,000* ft					
	EDRC:	1,200 bbls		High Volume Ports:	6 hours	High Volume Ports:	12 hours
	TSC:	2,400 bbls		Other Ports:	12 hours	Other Ports:	24 hours
W ¹	Protective Boom:	15,000* ft					
	EDRC:	12,500 bbls		High Volume Ports:	24 hours	High Volume Ports:	24 hours
	TSC:	25,000 bbls		Other Ports:	48 hours	Other Ports:	48 hours
W ²	Protective Boom:	15,000* ft					
	EDRC:	25,000 bbls		High Volume Ports:	30 hours	High Volume Ports:	36 hours
	TSC:	50,000 bbls		Other Ports:	36 hours	Other Ports:	48 hours
W ³	Protective Boom:	15,000 ft					
	EDRC:	50,000 bbls		High Volume Ports:	54 hours	High Volume Ports:	60 hours
	TSC:	100,000 bbls		Other Ports:	60 hours	Other Ports:	72 hours
Open Ocean							
MM	Protective Boom:	0 ft					
	EDRC:	1,200 bbls		High Volume Ports:	6 hours	High Volume Ports:	12 hours
	TSC:	2,400 bbls		Other Ports:	12 hours	Other Ports:	24 hours
W ¹	Protective Boom:	0 ft					
	EDRC:	12,500 bbls		High Volume Ports:	6 hours	High Volume Ports:	12 hours
	TSC:	25,000 bbls		Other Ports:	12 hours	Other Ports:	24 hours
W ²	Protective Boom:	0 ft					
	EDRC:	25,000 bbls		High Volume Ports:	30 hours	High Volume Ports:	36 hours
	TSC:	50,000 bbls		Other Ports:	36 hours	Other Ports:	48 hours
W ³	Protective Boom:	0 ft					
	EDRC:	50,000 bbls		High Volume Ports:	54 hours	High Volume Ports:	60 hours
	TSC:	100,000 bbls		Other Ports:	60 hours	Other Ports:	72 hours
¹ Rivers/canals include bodies of water, including the Intracoastal Waterway and other bodies artificially created for navigation, confined within an inland area and having a project depth of 12 feet (3.66 meters).							
² EDRC stands for "effective daily recovery capacity," or the calculated recovery capacity of oil recovery devices determined by using a formula that takes into account limiting factors such as daylight, weather, sea state, and emulsified oil in the recovered material.							
³ TSC stands for "temporary storage capacity," meaning sufficient storage capacity equal to twice the EDRC of an OSRO. Temporary storage may include inflatable bladders, rubber barges, certified barge capacity, or other temporary storage that can be utilized on scene at a spill response and which is designed and intended for the storage of flammable or combustible liquids. It does not include vessels or barges of opportunity for which no pre-arrangements have been made. Fixed shore-based storage capacity, ensured available by contract or other means, will be acceptable.							
* In addition, 1,000 feet of containment boom plus 300 feet per skimming system.							

OSRO CONTRACTS AND PREP CERTIFICATIONS

KEN'S MARINE SERVICES, INC.



March 5, 2010

Ken's Marine Service, Inc.
117 East 22nd Street
Bayonne, NJ 07002

RE: 2009 OSRO Equipment Deployment Documentation Request

Dear PREP Coordinator:

Please document your 2009 equipment deployment exercise requirements in accordance with the National Preparedness for Response and Exercise Program (PREP) guidelines by signing and returning this form. If a contract number is not shown below, please provide the contract number that you currently show on file. If another person with your Company will certify this 2009 PREP, please mark through your name and provide the form to that person to process.

Your signature will provide certification of OSRO compliance with the PREP guidelines, whereby you have properly deployed and exercised your oil spill removal equipment during the fiscal year of 2009.

OSRO EQUIPMENT DEPLOYMENT COMPLIANCE STATEMENT

I hereby certify that the Company has met all equipment deployment requirements for 2009 in accordance with the USCG PREP guidelines.

JOYCE LUBACH
(Printed Name)

Joyce Lubach
(Signature)

Corporate Secretary
(Title)

Contract No.: _____

Ken's Marine Service, Inc.
(Print Company Name)

3/10/2010
(Date)

Please fax, or most preferably email, the completed original copy of this letter immediately or by April 5, 2010 to our Compliance Consultant.

Angela Hardy
O'Brien's Response Management Inc.
6620 Cypresswood Drive, Ste. 200
Spring, TX 77379

Fax: (281) 320-9700

Email: angela.hardy@obriensrm.com

If there are any questions, please contact Angela Hardy at 281-320-9796. Your immediate attention and response is appreciated.

Sincerely,

A. Hardy
for

Kerry Lambert
HSE Manager

55 East Paulding Drive, Suite 109-309, Dallas GA 30157

Office Telephone 678-363-5921

Shell/Motiva 0008775

[MOTIVA ENTERPRISES LLC]

PROCUREMENT AGREEMENT FOR SERVICES

Seller: Ken's Marine Service, Inc.

Agreement #: CMD 200014

Issue Date: 06/01/2010

To Be Used For:	Commodity Codes:
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SELLER: Address 1: Attn: Telephone: Fax: Email:	Ken's Marine Service, Inc. 116 East 22 nd Street Bayonne, NJ 07002 Raymond Huckemeyer 201-437-3541 201-221-8578 ampd@kensmarine.net	Invoicing Information: Please mail invoice with Freight bill (when Prepaid/Add to Invoice) and bills of lading. For questions regarding payment of invoices, please call: As indicated on Buyer's Release Document.
--	--	---

Ship To:	As Per Buyer's Release	Bill To:	As Per Buyer's Release
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1. Payment Terms of Net 45 days will be based on the date invoice is received. All invoices and packing slips must reference the applicable Buyer Release Document or Account Code and be forwarded to the "Bill To" address. Failure to do so may delay or prevent payment.

Delivery term:	As Per Buyer's Release
Shipping Directions:	As Per Buyer's Release
Freight Charges:	<input checked="" type="checkbox"/> Prepaid & Allowed <input type="checkbox"/> Prepaid/Add to Invoice. <input type="checkbox"/> Collect

Notice: This form contains a Liability-Indemnity clause. Please read carefully.

This Procurement Agreement ("Agreement"), made on 06/01/2010 ("Effective Date"), and terminating on 06/01/2013, between Motiva Enterprises LLC, a company having its principal office at 910 Louisiana Street, Houston, TX 77002 ("Buyer") and Ken's Marine Service, Inc., a company incorporated under the laws of New Jersey and having its statutory seat / principal offices at 116 East 22nd Street, Bayonne, NJ 07002 ("Seller") for the supply of Services related to emergency response and preparedness support in regards to marine and landside spills, hazardous material releases and other emergency incidents (as further described in Attachment 1 hereto). In the event of any conflict between the terms and conditions set forth in a Buyer Release Document hereunder (also referred to as Purchase Order) and this Agreement, the terms and conditions of this Agreement prevail except to the extent the terms or conditions of the Buyer Release Document or Purchase Order specifically state they supersede or amend the terms or conditions of this Agreement.

PART 1 - CORE PROVISIONS

1. STRUCTURE / DEFINITIONS

- 1.1 This Agreement consists of the Preamble stated above, the Core Provisions in Part 1, the General Terms and Conditions in Part 2, the Attachments in Part 3, and Schedules, if any, in Part 4.
- 1.2 Unless otherwise specified, words and phrases within this Agreement and its various Attachments and (if applicable) Schedules shall have the respective meanings set forth in the definitions provision of Part 2.

2. NOTICES

- 2.1 Any notice under this Agreement shall only be effective if given in writing in English and given in one of the methods specified in Clause 19 of the General Terms and Conditions, Part 2. Service of notice by telex, e-mail or international airmail shall not be effective.

- 2.2 For notices given to Seller:

Attention: Raymond Huckemeyer
Ken's Marine Service, Inc.
116 East 22nd Street
Bayonne, NJ 07002
Phone: 201-437-3541
Fax: 201-221-8578
Email: ampd@kensmarine.net

- 2.3 For notices given to Buyer:

Attention: Alejandro Barrella
Shell Oil Products US
910 Louisiana Street
Houston, TX 77002
Phone: 713-241-7382
Email: alejandro.barrella@shell.com

3. SIGNATURES

The Parties have caused this Agreement to be duly executed in duplicate original by their respective authorized representatives.

For: SELLER

For: BUYER

Signature: Raymond Huckemeyer Signature: [Signature]

Print Name: RAYMOND HUCKEMEYER Print Name: ALEJANDRO P. BARRELLA

Title: OPS - MGR. Title: SENIOR PROCUREMENT MANAGER

Date: 5-25-10 Date: 6-9-10

[MOTIVA ENTERPRISES LLC]

PROCUREMENT AGREEMENT FOR SERVICES

Seller: Miller Environmental Group, Inc.
 Agreement #: CMD 200013
 Issue Date: 05/10/2010

To Be Used For:	Commodity Codes:
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Seller: Address 1: Attn: Telephone: Fax: Email:	Miller Environmental Group, Inc. 538 Edwards Avenue Calverton, NY 11933 James H. Davey 631-369-4900 x210 631-369-4909 jdavey@millerenv.com	Invoicing Information: Please mail invoice with Freight bill (when Prepaid/Add to Invoice) and bills of lading. For questions regarding payment of invoices, please call: As indicated on Buyer's Release Document.
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Ship To: As Per Buyer's Release	Bill To: As Per Buyer's Release
---------------------------------	---------------------------------

I. Payment Terms of Net 45 days will be based on the date invoice is received. All invoices and packing slips must reference the applicable Buyer Release Document or Account Code and be forwarded to the "Bill To" address. Failure to do so may delay or prevent payment.

Delivery term:	As Per Buyer's Release
Shipping Directions:	As Per Buyer's Release
Freight Charges:	<input checked="" type="checkbox"/> Prepaid & Allowed <input type="checkbox"/> Prepaid/Add to Invoice <input type="checkbox"/> Collect

Notice: This form contains a Liability-Indemnity clause. Please read carefully.

This Procurement Agreement ("Agreement"), made on 05/10/2010 ("Effective Date"), and terminating on 05/10/2013, between Motiva Enterprises LLC, a company having its principal office at 910 Louisiana Street, Houston, TX 77002 ("Buyer") and Miller Environmental Group, Inc., a company incorporated under the laws of New York and having its statutory seat / principal offices at 538 Edwards Avenue, Calverton, NY 11933 ("Seller") for the supply of Services related to emergency response and preparedness support in regards to marine and landside spills, hazardous material releases and other emergency incidents (as further described in **Attachment 1** hereto). In the event of any conflict between the terms and conditions set forth in a Buyer Release Document hereunder (also referred to as Purchase Order) and this Agreement, the terms and conditions of this Agreement prevail except to the extent the terms or conditions of the Buyer Release Document or Purchase Order specifically state they supersede or amend the terms or conditions of this Agreement.

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- 1.2 Unless otherwise specified, words and phrases within this Agreement and its various Attachments and (if applicable) Schedules shall have the respective meanings set forth in the definitions provision of Part 2.

2. NOTICES

- 2.1 Any notice under this Agreement shall only be effective if given in writing in English and given in one of the methods specified in Clause 19 of the General Terms and Conditions, Part 2. Service of notice by telex, e-mail or international airmail shall not be effective.

- 2.2 For notices given to Seller:

Attention: James H. Davey
Miller Environmental Group, Inc.
538 Edwards Avenue
Calverton, NY 11933
Phone: 631-369-4900 x210
Fax: 631-369-4909
Email: jdavey@millerenv.com

- 2.3 For notices given to Buyer:

Attention: Alejandro Barrella
Shell Oil Products US
910 Louisiana Street
Houston, TX 77002
Phone: 713-241-7382
Email: alejandro.barrella@shell.com

3. SIGNATURES

The Parties have caused this Agreement to be duly executed in duplicate original by their respective authorized representatives.

For:

For: *Miller Environmental Group, Inc.*

Signature: 

Signature: 

Print Name: Alejandro P. BARRELLA

Print Name: JAMES H. DAVEY

Title: SENIOR PROCUREMENT MANAGER

Title: V.P.

Date: 6-8-10

Date: 5-6-10

ATLANTIC RESPONSE INC.



March 5, 2010

Atlantic Response, Inc.
12D Connerty Court
East Brunswick, NJ 08816

RE: 2009 OSRO Equipment Deployment Documentation Request

Dear PREP Coordinator:

Please document your 2009 equipment deployment exercise requirements in accordance with the National Preparedness for Response and Exercise Program (PREP) guidelines by signing and returning this form. If a contract number is not shown below, please provide the contract number that you currently show on file. If another person with your Company will certify this 2009 PREP, please mark through your name and provide the form to that person to process.

Your signature will provide certification of OSRO compliance with the PREP guidelines, whereby you have properly deployed and exercised your oil spill removal equipment during the fiscal year of 2009.

OSRO EQUIPMENT DEPLOYMENT COMPLIANCE STATEMENT

I hereby certify that the Company has met all equipment deployment requirements for 2009 in accordance with the USCG PREP guidelines.

RALPH DAVKE
(Printed Name)


(Signature)

DIRECTOR OF OPERATIONS
(Title)

Contract No.: 4700002185

Atlantic Response, Inc.
(Print Company Name)

3/11/10
(Date)

Please fax, or most preferably email, the completed original copy of this letter immediately or by April 5, 2010 to our Compliance Consultant.

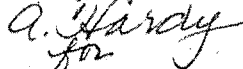
Angela Hardy
O'Brien's Response Management Inc.
6620 Cypresswood Drive, Ste. 200
Spring, TX 77379

Fax: (281) 320-9700

Email: angela.hardy@obriensrm.com

If there are any questions, please contact Angela Hardy at 281-320-9796. Your immediate attention and response is appreciated.

Sincerely,



Kerry Lambert
HSE Manager

55 East Paulding Drive, Suite 109-309, Dallas GA 30157

Office Telephone 678-363-5921

Shell/Motiva 0008781

CLEAN HARBORS ENVIRONMENTAL SERVICES, INC.



March 5, 2010

Scott Metzger
~~Hawk Hickman~~

Clean Harbors Environmental Services, Inc.
30 Joseph Street
Kingston, MA 02364

RE: 2009 OSRO Equipment Deployment Documentation Request

Dear Mr. ~~Hickman~~ *Metzger*:

Please document your 2009 equipment deployment exercise requirements in accordance with the National Preparedness for Response and Exercise Program (PREP) guidelines by signing and returning this form. If a contract number is not shown below, please provide the contract number that you currently show on file. If another person with your Company will certify this 2009 PREP, please mark through your name and provide the form to that person to process.

Your signature will provide certification of OSRO compliance with the PREP guidelines, whereby you have properly deployed and exercised your oil spill removal equipment during the fiscal year of 2009.

OSRO EQUIPMENT DEPLOYMENT COMPLIANCE STATEMENT

I hereby certify that the Company has met all equipment deployment requirements for 2009 in accordance with the USCG PREP guidelines.

Scott Metzger
~~Hawk Hickman~~
(Printed Name)

[Signature]
(Signature)

Vice President
(Title)

Contract No.: RESA-0001-LDC

Clean Harbors Environmental Services, Inc.
(Print Company Name)

3-9-10
(Date)

Please fax, or most preferably email, the completed original copy of this letter immediately or by April 5, 2010 to our Compliance Consultant.

Angela Hardy
O'Brien's Response Management Inc.
6620 Cypresswood Drive, Ste. 200
Spring, TX 77379

Fax: (281) 320-9700

Email: angela.hardy@obriensrm.com

If there are any questions, please contact Angela Hardy at 281-320-9796. Your immediate attention and response is appreciated.

Sincerely,

A. Hardy
for

Kerry Lambert
HSE Manager

55 East Paulding Drive, Suite 109-309, Dallas GA 30157

Office Telephone 678-363-5921

Shell/Motiva 0008783

MILLER ENVIRONMENTAL GROUP, INC.



June 11, 2010

James H. Davey
Miller Environmental Group, Inc.
538 Edwards Ave.
Calverton, NY 11933

RE: 2009 OSRO Equipment Deployment Documentation Request

Dear Mr. Davey:

Please document your 2009 equipment deployment exercise requirements in accordance with the National Preparedness for Response and Exercise Program (PREP) guidelines by signing and returning this form. If another person with your Company will certify this 2009 PREP, please mark through your name and provide the form to that person to process.

Your signature will provide certification of OSRO compliance with the PREP guidelines, whereby you have properly deployed and exercised your oil spill removal equipment during the fiscal year of 2009.

OSRO EQUIPMENT DEPLOYMENT COMPLIANCE STATEMENT

I hereby certify that the Company has met all equipment deployment requirements for 2009 in accordance with the USCG PREP guidelines.

James H. Davey
(Printed Name)


(Signature)

Vice President
(Title)

Agreement No.: CMD 200013

Miller Environmental Group, Inc.
(Print Company Name)

6/18/10
(Date)

Please fax, or most preferably email, the completed copy of this letter immediately or by June 20, 2010 to our Compliance Consultant.

Angela Hardy
O'Brien's Response Management Inc.
6620 Cypresswood Drive, Ste. 200
Spring, TX 77379

Fax: (281) 320-9700

Email: angela.hardy@obriensrm.com

If there are any questions, please contact Angela Hardy at 281-320-9796. Your immediate attention and response is appreciated.

Sincerely,

Kerry Lambert
Health and Safety Manager

[MOTIVA ENTERPRISES LLC]

PROCUREMENT AGREEMENT FOR SERVICES

Seller: Miller Environmental Group, Inc.

Agreement #: CMD 200013

Issue Date: 05/10/2010

To Be Used For:		Commodity Codes:
Seller: Address 1: Attn: Telephone: Fax: Email:	Miller Environmental Group, Inc. 538 Edwards Avenue Calverton, NY 11933 James H. Davey 631-369-4900 x210 631-369-4909 jdavey@millerenv.com	Invoicing Information: Please mail invoice with Freight bill (when Prepaid/Add to Invoice) and bills of lading. For questions regarding payment of invoices, please call: As indicated on Buyer's Release Document.
Ship To: As Per Buyer's Release		Bill To: As Per Buyer's Release
1. Payment Terms of Net 45 days will be based on the date invoice is received. All invoices and packing slips must reference the applicable Buyer Release Document or Account Code and be forwarded to the "Bill To" address. Failure to do so may delay or prevent payment.		
Delivery term:	As Per Buyer's Release	
Shipping Directions:	As Per Buyer's Release	
Freight Charges:	<input checked="" type="checkbox"/> Prepaid & Allowed <input type="checkbox"/> Prepaid/Add to Invoice <input type="checkbox"/> Collect	
Notice: This form contains a Liability-Indemnity clause. Please read carefully.		

This Procurement Agreement ("Agreement"), made on 05/10/2010 ("Effective Date"), and terminating on 05/10/2013, between Motiva Enterprises LLC, a company having its principal office at 910 Louisiana Street, Houston, TX 77002 ("Buyer") and Miller Environmental Group, Inc., a company incorporated under the laws of New York and having its statutory seat / principal offices at 538 Edwards Avenue, Calverton, NY 11933 ("Seller") for the supply of Services related to emergency response and preparedness support in regards to marine and landside spills, hazardous material releases and other emergency incidents (as further described in Attachment 1 hereto). In the event of any conflict between the terms and conditions set forth in a Buyer Release Document hereunder (also referred to as Purchase Order) and this Agreement, the terms and conditions of this Agreement prevail except to the extent the terms or conditions of the Buyer Release Document or Purchase Order specifically state they supersede or amend the terms or conditions of this Agreement.

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2. NOTICES

- 2.1 Any notice under this Agreement shall only be effective if given in writing in English and given in one of the methods specified in Clause 19 of the General Terms and Conditions, Part 2. Service of notice by telex, e-mail or international airmail shall not be effective.

- 2.2 For notices given to Seller:

Attention: James H. Davey
Miller Environmental Group, Inc.
538 Edwards Avenue
Calverton, NY 11933
Phone: 631-369-4900 x210
Fax: 631-369-4909
Email: jdavey@millerenv.com

- 2.3 For notices given to Buyer:

Attention: Alejandro Barrella
Shell Oil Products US
910 Louisiana Street
Houston, TX 77002
Phone: 713-241-7382
Email: alejandro.barrella@shell.com

3. SIGNATURES

The Parties have caused this Agreement to be duly executed in duplicate original by their respective authorized representatives.

For:

For: *Miller Environmental Group, Inc*

Signature: 

Signature: 

Print Name: Alejandro P. BARRELLA

Print Name: JAMES H. DAVEY

Title: SENIOR PROCUREMENT MANAGER

Title: V.P.

Date: 6-8-10

Date: 5-6-10

MARINE SPILL RESPONSE CORPORATION (MSRC)



Don Toenshoff, Jr.
Executive Vice President

March 17, 2010

Mr. Martin Padilla
Motiva Enterprises
910 Louisiana St. One Shell Plaza – Room 694
Houston, TX 77002-4916

Dear Mr. Padilla:

The National Preparedness for Response Exercise Program (NPREP) Guidelines requires a response planholder to ensure that Equipment Deployment Exercise requirements are met on an annual basis. The NPREP Guidelines identify the minimum amount of equipment that must be deployed in Equipment Deployment Exercises.

This letter provides documentation to you that MSRC has completed the NPREP Equipment Deployment Exercise requirements for 2009. For purposes of Equipment Deployment Exercises under NPREP, each MSRC Region is considered a separate Oil Spill Removal Organization (OSRO). MSRC is divided into four regions, Eastern (Maine – Georgia, and the Mid-Continent), Southern (Florida - Texas including Puerto Rico and the U.S. Virgin Islands), California (self-explanatory) and Pacific/Northwest (Washington, Oregon and Hawaii). MSRC has deployed, at a minimum, the NPREP required amounts of each type of boom and one of each type of skimming system in the applicable regional inventory. This equipment has been deployed, if required, in each of the three types of operating environments listed in NPREP ("River & Canal", "Inland", and "Ocean"). Each of the four MSRC Regions has met these equipment deployment requirements in 2009. In addition, each Region has conducted extensive personnel training and has maintained its equipment according to a rigid preventative and corrective maintenance schedule.

MSRC has an aerial dispersant program, which is comprised of a contracted C-130 aircraft (based in Coolidge, AZ) and a contracted King Air BE-90A aircraft (based in Stennis, MS). MSRC's Dispersant Program, including the C-130 and King Air aircraft, are frequently exercised through internal training and drills. In addition to training, the aerial dispersant spray system on each aircraft was inspected monthly in accordance with stated MMS requirements. This letter provides documentation to you that MSRC has completed these requirements.

Documentation and records of the specific information relating to MSRC Equipment Deployment Exercises and Equipment Maintenance records are maintained in each MSRC Region. Additionally, highlights of when each MSRC Region satisfied the equipment deployment requirements and when the dispersant spray system inspections were conducted are available on the MSRC website (www.msrc.org) on the Customer Access page (USER ID: skimmer / PASSWORD: transrec).

Please feel free to contact the MSRC regions directly or me at (703) 326-5610 for additional information.

Sincerely,

A handwritten signature in black ink, appearing to be "D. Toenshoff". The signature is written in a cursive, stylized manner.

220 Spring Street Suite 500 Herndon, VA 20170 Telephone 703 326 5600 Fax 703 326 5660

Shell/Motiva 0008789

AERIAL OIL TRACKING RESOURCES

Judith A. Roos
Vice President
Marketing, Customer Services & Corporate Relations
(703) 326-5617

February 4, 2011

Re: Aerial Oil Tracking Resources

Dear Customer:

On February 22, 2011, the Aerial Oil Tracking requirements of 33 CFR Part 154.1035 (b)(3)(vii) for MTR Facility Response Plans (FRPs) and 33 CFR Part 155.1035(i)(11), 33 CFR Part 155.1040(j)(11), and 33 CFR Part 155.1050(l) for Vessel Response Plans (VRPs) go into effect.

For planning purposes under these regulations, the Aerial Oil Tracking resources must be capable of supporting all response operations, including: mechanical recovery, dispersant application, and in situ burning. The Marine Spill Response Corporation (MSRC) has developed the following capability in conjunction with this new regulatory requirement that our plan holder customers may cite in their response plans, along with their citation of MSRC as the resource provider:

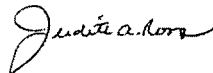
- Aerial surveillance aircraft;
- Along with the aircraft, the pilots and trained personnel to support oil spill response operations;
- For planning purposes, these resources are capable of arriving at the site of the discharge in advance of the arrival of response resources identified for Tiers 1, 2 and 3 planning timeframes; and
- Observation personnel trained in the protocols of oil spill reporting and assessment.

Observation personnel are primarily trained MSRC employees. The other resources are available through contracts or other approved means (specifically Letters of Intent ("LOIs") or other agreements with various aircraft providers. These services are subject to availability of aircraft and personnel. Multiple aircraft providers are listed for each geographic Captain of the Port ("COTP") Zone.

MSRC will maintain lists of the potentially available aircraft providers, along with other documentation, by COTP zones within the respective MSRC Regional Response Center. These records will be made available upon request. MSRC will periodically review this capability by COTP zone and update the documentation as appropriate.

MSRC has provided a copy of this letter to US Coast Guard Headquarters personnel responsible for VRP compliance and to COTPs within MSRC's Operations Area for their information. Customers may use this letter in their FRP or VRP as they deem appropriate.

Sincerely,



AMPD CHECKLIST

AMPD Response Coverage Information for _____ (Company Name)

1. AMPD response provider (check one): ☐ Plan Holder ☐ OSRO

If OSRO, company name(s): _____ Expiration Date (contract/other approved means) _____

Primary	<u>Ken's Marine Service, Inc.</u>	<u>Open ended</u>
	<u>Miller Environmental Group, Inc.</u>	<u>Open ended</u>
	<u>Marine Spill Response Corporation</u>	<u>Open ended</u>
	<u>Atlantic Response, Inc.</u>	<u>Open ended</u>

2. Equipment deployment personnel are (check one):

☐ Located at equipment site ☐ On recall

3. Physical location (street address) of AMPD equipment (boom/skimmer/temporary storage) and qualified deployment personnel.

Equipment Address (*1-hour response time):

Boom: _____

Equipment Address (*2-hour response time):

Skimmer: _____

Temporary Storage: _____

**Planning Assumptions: On-water speed, 5 knots; land speed, 35 miles per hour; notification/mobilization – 30 minutes.*

11.2 RESPONSE TEAM JOB DESCRIPTIONS

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ICS ROLES AND RESPONSIBILITIES

COMMON RESPONSIBILITIES

The following is a checklist applicable to all personnel in an ICS organization:

- *Receive assignment, including:*
 - Job assignment
 - Resource order number and request number
 - Reporting location
 - Reporting time
 - Travel instructions
 - Special communications instructions
- Upon arrival, check-in at designated check-in location.
- Receive briefing from immediate supervisor.
- Acquire work materials.
- Supervisors maintain accountability for assigned personnel.
- Organize and brief subordinates.
- Know your assigned radio frequency(s) and ensure communications equipment is operating properly.
- Use clear text and ICS terminology (no codes) in all communications.
- Complete forms and reports required of the assigned position and send to Documentation Unit.
- Maintain unit records, including Unit/Activity Log (ICS Form 214).
- Response to demobilization orders and brief subordinates regarding demobilization.

UNIT LEADER RESPONSIBILITIES

In ICS, a Unit Leader's responsibilities are common to all units in all parts of the organization. Common responsibilities of Unit Leaders are listed below.

- Review common responsibilities.
- Receive briefing from Incident Commander, Section Chief or Branch Director, as appropriate.
- Participate in incident planning meetings, as required.
- Determine current status of unit activities.
- Order additional unit staff, as appropriate.
- Determine resource needs.
- Confirm dispatch and estimated time of arrival of staff and supplies.
- Assign specific duties to staff; supervise staff.
- Develop and implement accountability, safety and security measures for personnel and resources.
- Supervise demobilization of unit, including storage of supplies.
- Provide Supply Unit Leader with a list of supplies to be replenished.
- Maintain unit records, including Unit/Activity Log (ICS Form 214).

COMMAND

Incident Commander	11
Information Officer	11
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Legal Officer	12

INCIDENT COMMANDER

- Assess the situation and/or obtain a briefing from the prior IC.
- Determine Incident Objectives and strategy.
- Establish the immediate priorities.
- Establish an ICP.
- Brief Command Staff and Section Chiefs.
- Review meetings and briefings.
- Establish an appropriate organization.
- Ensure planning meetings are scheduled as required.
- Approve and authorize the implementation of an IAP.
- Ensure that adequate safety measures are in place.
- Coordinate activity for all Command and General Staff.
- Coordinate with key people and officials.
- Approve requests for additional resources or for the release of resources.
- Keep agency administrator informed of incident status.
- Approve the use of trainees, volunteers, and auxiliary personnel.
- Authorize release of information to the news media.
- Ensure incident Status Summary (ICS Form 209) is completed and forwarded to appropriate higher authority.
- Order the demobilization of the incident when appropriate.

INFORMATION OFFICER

- Determine from the IC if there are any limits on information release.
- Develop material for use in media briefings.
- Obtain IC approval of media releases.
- Inform media and conduct media briefings.
- Arrange for tours and other interviews or briefings that may be required.
- Obtain media information that may be useful to incident planning.
- Maintain current information summaries and/or displays on the incident and provide information on the status of the incident to assigned personnel.

LIAISON OFFICER

- Be a contact point for Agency Representatives.
- Maintain a list of assisting and cooperating agencies and Agency Representatives.
Monitor check-in sheets daily to ensure that all Agency Representatives are identified.
- Assist in establishing and coordinating interagency contacts.
- Keep agencies supporting the incident aware of incident status.
- Monitor incident operations to identify current or potential inter-organizational problems.
- Participate in planning meetings, providing current resource status, including limitations and capability of assisting agency resources.
- Coordinate response resource needs for Natural Resource Damage Assessment and Restoration (NRDAR) activities with the OPS during oil and HAZMAT responses.
- Coordinate response resource needs for incident investigation activities with the OPS.
- Ensure that all required agency forms, reports and documents are completed prior to demobilization.
- Coordinate activities of visiting dignitaries.

SAFETY OFFICER

- Participate in planning meetings.
- Identify hazardous situations associated with the incident.
- Review the IAP for safety implications.
- Exercise emergency authority to stop and prevent unsafe acts.
- Investigate accidents that have occurred within the incident area.
- Review and approve the medical plan.
- Develop the Site Safety Plan and publish Site Safety Plan summary (ICS Form 208) as required.

LEGAL OFFICER

- Participate in planning meetings, if requested.
- Advise on legal issues relating to in-situ burning, use of dispersants, and other alternative response technologies.
- Advise on legal issues relating to differences between Natural Resource Damage Assessment Restoration (NRADR) and response activities.
- Advise on legal issues relating to investigations.
- Advise on legal issues relating to finance and claims.
- Advise on legal issues relating to response.

OPERATIONS

Operations Section Chief..... 14

Branch Director 14

Division/Group Supervisor 14

Staging Area Manager..... 15

Air Operations Branch Director..... 15

OPERATIONS SECTION CHIEF

- Develop operations portion of IAP.
- Brief and assign Operations Section personnel in accordance with the IAP.
- Supervise Operations Section.
- Determine need and request additional resources.
- Review suggested list of resources to be released and initiate recommendation for release of resources.
- Assemble and disassemble strike teams assigned to the Operations Section.
- Report information about special activities, events, and occurrences to the IC.
- Respond to resource requests in support of NRDAR activities.

BRANCH DIRECTOR

- Develop with subordinates alternatives for Branch control operations.
- Attend planning meetings at the request of the OPS.
- Review Division/Group Assignment Lists (ICS Form 204) for Divisions/Groups within the Branch. Modify lists based on effectiveness of current operations.
- Assign specific work tasks to Division/Group Supervisors.
- Supervise Branch operations.
- Resolve logistic problems reported by subordinates.
- Report to OPS when: the IAP is to be modified; additional resources are needed; surplus resources are available; or hazardous situations or significant events occur.
- Approve accident and medial reports originating within the Branch.

DIVISION/GROUP SUPERVISOR

- Implement IAP for Division/Group.
- Provide the IAP to Strike Team Leaders, when available.
- Identify increments assigned to the Division/Group.
- Review Division/Group assignments and incident activities with subordinates and assign tasks.
- Ensure that the IC and/or Resources Unit is advised of all changes in the status of resources assigned to the Division/Group.
- Coordinate activities with adjacent Division/Group.
- Determine need for assistance on assigned tasks.
- Submit situation and resources status information to the Branch Director or the OPS.
- Report hazardous situations, special occurrences, or significant events (e.g., accidents, sickness, discovery of unanticipated sensitive resources) to the immediate supervisor.
- Ensure that assigned personnel and equipment get to and from assignments in a timely and orderly manner.
- Resolve logistics problems within the Division/Group.
- Participate in the development of Branch plans for the next operational period.

STAGING AREA MANAGER

- Establish Staging Area layout.
- Determine any support needs for equipment, feeding, sanitation and security.
- Establish check-in function as appropriate.
- Post areas for identification and traffic control.
- Request maintenance service for equipment at Staging Area as appropriate.
- Respond to request for resource assignments
- Obtain and issue receipts for radio equipment and other supplies distributed and received at Staging Area.
- Determine required resource levels from the OPS.
- Advise the OPS when reserve levels reach minimums.
- Maintain and provide status to Resource Unit of all resources in Staging Area.
- Demobilize Staging Area in accordance with the Incident Demobilization Plan.

AIR OPERATIONS BRANCH DIRECTOR

- Organize preliminary air operations.
- Request declaration (or cancellation) of restricted air space
- Participate in preparation of the IAP through the OPS. Insure that the air operations portion of the IAP takes into consideration the Air Traffic Control requirements of assigned aircraft.
- Perform operational planning for air operations.
- Prepare and provide Air Operations Summary Worksheet (ICS Form 220) to the Air Support Group and Fixed-Wing Bases.
- Determine coordination procedures for use by air organization with ground Branches, Divisions, or Groups.
- Coordinate with appropriate Operations Section personnel.
- Supervise all air operations activities associated with the incident.
- Evaluate helibase locations.
- Establish procedures for emergency reassignment of aircraft.
- Schedule approved flights of non-incident aircraft in the restricted air space area.
- Coordinate with the Operations Coordination Center (OCC) through normal channels on incident air operations activities.
- Inform the Air Tactical Group Supervisor of the air traffic situation external to the incident.
- Consider requests for non-tactical use of incident aircraft.
- Resolve conflicts concerning non-incident aircraft.
- Coordinate with FAA.
- Update air operations plans.
- Report to the OPS on air operations activities.
- Report special incidents/accidents.
- Arrange for an accident investigation team when warranted.

PLANNING

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Situation Unit Leader.....	17
Documentation Unit Leader	18
Demobilization Unit Leader.....	18
Environmental Unit Leader	19

PLANNING SECTION CHIEF

- Collect and process situation information about the incident.
- Supervise preparation of the IAP.
- Provide input to the IC and the OPS in preparing the IAP.
- Chair planning meetings and participate in other meetings as required.
- Reassign out-of-service personnel already on-site to ICS organizational positions as appropriate.
- Establish information requirements and reporting schedules for Planning Section Units (e.g., Resources, Situation Units).
- Determine the need for any specialized resources in support of the incident.
- If requested, assemble and disassemble Strike Teams and Task Forces not assigned to Operations.
- Establish special information collection activities as necessary (e.g., weather, environmental, toxics, etc.).
- Assemble information on alternative strategies.
- Provide periodic predictions on incident potential.
- Report any significant changes in incident status.
- Compile and display incident status information.
- Oversee preparation and implementation of the Incident Demobilization Plan.
- Incorporate plans (e.g., Traffic, Medical, Communications, Site Safety) into the IAP.

RESOURCES UNIT LEADER

- Establish the check-in function at incident locations.
- Prepare Organization Assignment List (ICS Form 203) and Organization Chart (ICS Form 207).
- Prepare appropriate parts of Division Assignment Lists (ICS Form 204).
- Prepare and maintain the ICP display (to include organization chart and resource allocation and deployment).
- Maintain and post the current status and location of all resources.
- Maintain master roster of all resources checked in at the incident.

SITUATION UNIT LEADER

- Begin collection and analysis of incident data as soon as possible.
- Prepare, post, or disseminate resource and situation status information as required, including special requests.
- Prepare periodic predictions or as requested by the PSC.
- Prepare the Incident Status Summary Form (ICS Form 209).
- Provide photographic services and maps if required.

DOCUMENTATION UNIT LEADER

- Set up work area; begin organization of incident files.
- Establish duplication service; respond to requests.
- File all official forms and reports.
- Review records for accuracy and completeness; inform appropriate units of errors or omissions.
- Provide incident documentation as requested.
- Store files for post-incident use.

DEMOBILIZATION UNIT LEADER

- Participate in planning meetings as required.
- Review incident resource records to determine the likely size and extent of demobilization effort.
- Based on the above analysis, add additional personnel, workspace, and supplies as needed.
- Coordinate demobilization with Agency Representatives.
- Monitor the on-going Operations Section resource needs.
- Identify surplus resources and probable release time.
- Develop incident check-out function for all units.
- Evaluate logistics and transportation capabilities to support demobilization.
- Establish communications with off-incident facilities, as necessary.
- Develop an Incident Demobilization Plan detailing specific responsibilities and release priorities and procedures.
- Prepare appropriate directories (e.g., maps, instructions, etc.) for inclusion in the demobilization plan.
- Distribute demobilization plan (on and off-site).
- Provide status reports to appropriate requestors.
- Ensure that all Sections/Units understand their specific demobilization responsibilities.
- Supervise execution of the Incident Demobilization Plan.
- Brief the PSC on demobilization progress.

ENVIRONMENTAL UNIT LEADER

- Participate in Planning Section meetings.
- Identify sensitive areas and recommend response priorities.
- Following consultation with natural resource trustees, provide input on wildlife protection strategies (e.g., removing oiled carcasses, pre-emptive capture, hazing, and/or capture and treatment).
- Determine the extent, fate and effects of contamination.
- Acquire, distribute and provide analysis of weather forecasts.
- Monitor the environmental consequences of cleanup actions.
- Develop shoreline cleanup and assessment plans. Identify the need for, and prepare any special advisories or orders.
- Identify the need for, and obtain, permits, consultations, and other authorizations including Endangered Species Act (ESA) provisions.
- Following consultation with the FOSC's Historical/Cultural Resources Technical Specialist identify and develop plans for protection of affected historical/cultural resources.
- Evaluate the opportunities to use various response technologies.
- Develop disposal plans.
- Develop a plan for collecting, transporting, and analyzing samples.

LOGISTICS

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Medical Unit Leader.....	22
Food Unit Leader.....	22
Support Branch Director	23
Supply Unit Leader.....	23
Facility Unit Leader.....	23
Ground Support Unit Leader.....	24
Vessel Support Unit Leader.....	24

LOGISTICS SECTION CHIEF

- Plan the organization of the Logistics Section.
- Assign work locations and preliminary work tasks to Section personnel.
- Notify the Resources Unit of the Logistics Section units activated including names and locations of assigned personnel.
- Assemble and brief Branch Directors and Unit Leaders.
- Participate in preparation of the IAP.
- Identify service and support requirements for planned and expected operations.
- Provide input to and review the Communications Plan, Medical Plan and Traffic Plan.
- Coordinate and process requests for additional resources.
- Review the IAP and estimate Section needs for the next operational period.
- Advise on current service and support capabilities.
- Prepare service and support elements of the IAP.
- Estimate future service and support requirements.
- Receive Incident Demobilization Plan from Planning Section.
- Recommend release of Unit resources in conformity with Incident Demobilization Plan.
- Ensure the general welfare and safety of Logistics Section personnel.

SERVICE BRANCH DIRECTOR

- Determine the level of service required to support operations.
- Confirm dispatch of Branch personnel.
- Participate in planning meetings of Logistics Section personnel.
- Review the IAP.
- Organize and prepare assignments for Service Branch personnel.
- Coordinate activities of Branch Units.
- Inform the LSC of Branch activities.
- Resolve Service Branch problems.

COMMUNICATIONS UNIT LEADER

- Prepare and implement the Incident Radio Communications Plan (ICS Form 205).
- Ensure the Incident Communications Center and the Message Center is established.
- Establish appropriate communications distribution/maintenance locations within the Base/Camp(s).
- Ensure communications systems are installed and tested.
- Ensure an equipment accountability system is established.
- Ensure personal portable radio equipment from cache is distributed per Incident Radio Communications Plan.
- Provide technical information as required on:
 - Adequacy of communications systems currently in operation.
 - Geographic limitation on communications systems.
 - Equipment capabilities/limitations.
 - Amount and types of equipment available.
 - Anticipated problems in the use of communications equipment.
- Supervise Communications Unit activities.
- Maintain records on all communications equipment as appropriate.
- Ensure equipment is tested and repaired.
- Recover equipment from Units being demobilized.

MEDICAL UNIT LEADER

- Participate in Logistics Section/Service Branch planning activities.
- Prepare the Medical Plan (ICS Form 206).
- Prepare procedures for major medical emergency.
- Declare major emergency as appropriate.
- Respond to requests for medical aid, medical transportation, and medical supplies.
- Prepare and submit necessary documentation.

FOOD UNIT LEADER

- Determine food and water requirements.
- Determine the method of feeding to best fit each facility or situation.
- Obtain necessary equipment and supplies and establish cooking facilities.
- Ensure that well-balanced menus are provided.
- Order sufficient food and potable water from the Supply Unit.
- Maintain an inventory of food and water.
- Maintain food service areas, ensuring that all appropriate health and safety measures are being followed.
- Supervise caterers, cooks, and other Food Unit personnel as appropriate.

SUPPORT BRANCH DIRECTOR

- Determine initial support operations in coordination with the LSC and Service Branch Director.
- Prepare initial organization and assignments for support operations.
- Assemble and brief Support Branch personnel.
- Determine if assigned Branch resources are sufficient.
- Maintain surveillance of assigned units work progress and inform the LSC of their activities.
- Resolve problems associated with requests from the Operations Section.

SUPPLY UNIT LEADER

- Participate in Logistics Section/Support Branch planning activities.
- Determine the type and amount of supplies en route.
- Review the IAP for information on operations of the Supply Unit.
- Develop and implement safety and security requirements.
- Order, receive, distribute, and store supplies and equipment.
- Receive and respond to requests for personnel, supplies, and equipment.
- Maintain an inventory of supplies and equipment.
- Service reusable equipment.
- Submit reports to the Support Branch Director.

FACILITY UNIT LEADER

- Review the IAP.
- Participate in Logistics Section/Support Branch planning activities.
- Determine requirements for each facility, including the ICP.
- Prepare layouts of incident facilities.
- Notify Unit Leaders of facility layout.
- Activate incident facilities.
- Provide Base and Camp Managers and personnel to operate facilities.
- Provide sleeping facilities.
- Provide security services.
- Provide facility maintenance services (e.g., sanitation, lighting, clean up).
- Demobilize Base and Camp facilities.
- Maintain facility records

GROUND SUPPORT UNIT LEADER

- Participate in Support Branch/Logistics Section planning activities.
- Develop and implement the Traffic Plan.
- Support out-of-service resources.
- Notify the Resources Unit of all status changes on support and transportation vehicles.
- Arrange for and activate fueling, maintenance, and repair of ground resources.
- Maintain Support Vehicle Inventory and transportation vehicles (ICS Form 218).
- Provide transportation services, IAW requests from the LSC or Support Branch Director.
- Collect information on rented equipment.
- Requisition maintenance and repair supplies (e.g., fuel, spare parts).
- Maintain incident roads.
- Submit reports to Support Branch Director as directed.

VESSEL SUPPORT UNIT LEADER

- Participate in Support Branch/Logistics Section planning activities.
- Coordinate development of the Vessel Routing Plan.
- Coordinate vessel transportation assignments with the Protection and Recovery Branch or other sources of vessel transportation.
- Coordinate water-to-land transportation with the Ground Support Unit, as necessary.
- Maintain a prioritized list of transportation requirements that need to be scheduled with the transportation source.
- Support out-of-service vessel resources, as requested.
- Arrange for fueling, dockage, maintenance and repair of vessel resources, as requested.
- Maintain inventory of support and transportation vessels.

FINANCE/ADMINISTRATION

Finance/Administration Section Chief	26
Time Unit Leader	26
Procurement Unit Leader	27
Compensation/Claims Unit Leader	27
Cost Unit Leader	28

FINANCE/ADMINISTRATION SECTION CHIEF

- Attend planning meetings as required.
- Manage all financial aspects of an incident.
- Provide financial and cost analysis information as requested.
- Gather pertinent information from briefings with responsible agencies.
- Develop an operating plan for the Finance/Administration Section; fill supply and support needs.
- Determine the need to set up and operate an incident commissary.
- Meet with Assisting and Cooperating Agency Representatives, as needed.
- Maintain daily contact with agency(s) administrative headquarters on Finance/Administration matters.
- Ensure that all personnel time records are accurately completed and transmitted, according to policy.
- Provide financial input to demobilization planning.
- Ensure that all obligation documents initiated at the incident are properly prepared and completed.
- Brief administrative personnel on all incident-related financial issues needing attention or follow-up prior to leaving incident.

TIME UNIT LEADER

- Determine incident requirements for time recording function.
- Determine resource needs.
- Contact appropriate agency personnel/representatives.
- Ensure that daily personnel time recording documents are prepared and in compliance with policy.
- Establish time unit objectives.
- Maintain separate logs for overtime hours.
- Establish commissary operation on larger or long-term incidents as needed.
- Submit cost estimate data forms to the Cost Unit, as required.
- Maintain records security.
- Ensure that all records are current and complete prior to demobilization.
- Release time reports from assisting agency personnel to the respective Agency Representatives prior to demobilization.
- Brief the Finance/Administration Section Chief on current problems and recommendations, outstanding issues, and follow-up requirements.

PROCUREMENT UNIT LEADER

- Review incident needs and any special procedures with Unit Leaders, as needed.
- Coordinate with local jurisdiction on plans and supply sources.
- Obtain the Incident Procurement Plan.
- Prepare and authorize contracts and land-use agreements.
- Draft memoranda of understanding as necessary.
- Establish contracts and agreements with supply vendors.
- Provide for coordination between the Ordering Manager, agency dispatch, and all other procurement organizations supporting the incident.
- Ensure that a system is in place that meets agency property management requirements. Ensure proper accounting for all new property.
- Interpret contracts and agreements; resolve disputes within delegated authority.
- Coordinate with the Compensation/Claims Unit for processing claims.
- Coordinate use of impress funds, as required.
- Complete final processing of contracts and send documents for payment.
- Coordinate cost data in contracts with the Cost Unit Leader.
- Brief the Finance/Administration Section Chief on current problems and recommendations, outstanding issues, and follow-up requirements.

COMPENSATION/CLAIMS UNIT LEADER

- Establish contact with the incident SO and LO (or Agency Representatives if no LO is assigned).
- Determine the need for Compensation for Injury and Claims Specialists and order personnel as needed.
- Establish a Compensation for Injury work area within or as close as possible to the Medical Unit.
- Review Incident Medical Plan (ICS Form 206).
- Ensure that Compensation/Claims Specialists have adequate workspace and supplies.
- Review and coordinate procedures for handling claims with the Procurement Unit.
- Brief the Compensation/Claims Specialists on incident activity.
- Periodically review logs and forms produced by the Compensation/Claims Specialists to ensure that they are complete, entries are timely and accurate and that they are in compliance with agency requirements and policies.
- Ensure that all Compensation for Injury and Claims logs and forms are complete and routed appropriately for post-incident processing prior to demobilization.
- Keep the Finance/Administration Section Chief briefed on Unit status and activity.
- Demobilize unit in accordance with the Incident Demobilization Plan.

COST UNIT LEADER

- Coordinate cost reporting procedures.
- Collect and record all cost data.
- Develop incident cost summaries.
- Prepare resources-use cost estimates for the Planning Section.
- Make cost-saving recommendations to the Finance/Administration Section Chief.
- Ensure all cost documents are accurately prepared.
- Maintain cumulative incident cost records.
- Complete all records prior to demobilization.
- Provide reports to the Finance/Administration Section Chief.

11.3 Material Safety Data Sheets (MSDS)

The local COTP requires that the MSDS be kept in the OPA'90 Plan. Therefore, the MSDS for the major products stored at this Facility are in this Annex. A complete list of all MSDS is located at the Facility.

MATERIAL SAFETY DATA SHEET
Revision Date: 04/14/2003

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: Denatured Ethanol
MSDS NUMBER: 5708M - 2
PRODUCT CODE(S): 05482

MANUFACTURER ADDRESS: Motiva Enterprises LLC, P.O. Box 4540, Houston, TX.
77210-4540

TELEPHONE NUMBERS

Spill Information: (877) 242-7400
Health Information: (877) 504-9351
MSDS Assistance Number: (877) 276-7285

SECTION 2 PRODUCT/INGREDIENTS

CAS#	CONCENTRATION	INGREDIENTS
Mixture	100 %weight	Denatured Ethanol
64-17-5	95 - 99.99 %weight	Ethanol
Mixture	0 - 4.99 %weight	Unleaded Gasoline
108-88-3	0 - 1.49 %weight	Toluene
1330-20-7	0 - 1.49 %weight	Xylene, mixed isomers
71-43-2	0 - 0.24 %weight	Benzene
100-41-4	0 - 0.26 %weight	Ethyl Benzene
	0 - 2.49 %weight	Miscellaneous Hydrocarbons

NOTE: Content of Gasoline components will vary; Individual components may be present from trace amounts up to the maximum shown.

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance & Odor: Clear liquid. Alcohol odor.

Health Hazards: Causes severe eye irritation. May cause skin irritation. May be harmful or fatal if swallowed. Do not induce vomiting. May cause aspiration pneumonitis. May cause CNS depression.

Physical Hazards: Material is extremely flammable and heavier than air.

Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

Hazard Rating: Least - 0 Slight - 1 Moderate - 2 High - 3
Extreme - 4

Inhalation:

In applications where vapors (caused by high temperature) or mists (caused by mixing or spraying) are created, breathing may cause a mild burning sensation in the nose, throat and lungs. Breathing of high vapor concentrations may cause CNS depression, evidenced by dizziness, light-headedness, headache, nausea, drowsiness, and loss of coordination. Continued inhalation may result in unconsciousness.

Eye Irritation:

Severely irritating to the eyes causing pain, redness, swelling and blurred vision.

Skin Contact:

May be irritating to the skin causing a burning sensation, redness and/or swelling. Prolonged or repeated skin contact can cause defatting and drying of the skin which may result in a burning sensation and a dried, cracked appearance.

Ingestion:

This material may be harmful or fatal if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Generally considered to have a low order of acute oral toxicity.

Other Health Effects:

Carcinogenic in animal tests. Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant. Material is suspected of causing cancer in laboratory animals. See Section 11. Material may cause birth defects and/or miscarriages. See Section 11.

Refer to Section 11, Toxicological Information, for specific information on the following effects:

Developmental Toxicity, Genotoxicity

Primary Target Organs:

The following organs and/or organ systems may be damaged by overexposure to this material and/or its components:

Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver

Signs and Symptoms:

Irritation as noted above. Aspiration pneumonitis may be evidenced by coughing, labored breathing and cyanosis (bluish skin); in severe cases death may occur. Damage to blood-forming organs may be evidenced by: a) easy fatigability and pallor (RBC effect), b) decreased resistance to infection (WBC effect), c) excessive bruising and bleeding (platelet effect). Kidney damage may be indicated by changes in urine output or appearance, pain upon urination or in the lower back or general edema (swelling from fluid retention). Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye color), fatigue and sometimes pain and swelling in the upper right abdomen.

For additional health information, refer to section 11.

SECTION 4 FIRST AID MEASURES

Inhalation:

Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin:

Remove contaminated clothing. Flush with large amounts of water for at least 15 minutes and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye:

Immediately flush eyes with large amounts of water for at least 30 minutes, by the clock, while holding eyelids open. Transport to nearest medical facility for additional treatment.

Ingestion:

DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth.

Note to Physician:

If more than 2.0ml/kg body weight has been ingested and vomiting has not occurred, emesis should be induced with supervision. Keep victim's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions, or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

SECTION 5 FIRE FIGHTING MEASURES

Flash Point [Method]: -40 °F/-40 °C [Tagliabue Closed Cup]
Flammability in Air: 1.3%V - 7.6 %volume

Extinguishing Media:

Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

Fire Fighting Instructions:

WARNING! DANGER! EXTREMELY FLAMMABLE. Clear fire area of all non-emergency personnel. Only enter confined fire space with full bunker gear, including a positive pressure, NIOSH-approved, self-contained breathing apparatus. Cool surrounding equipment, fire-exposed containers and structures with water. Container areas exposed to direct flame contact should be cooled with large quantities of water (500 gallons water per minute flame impingement exposure) to prevent weakening of container structure.

Unusual Fire Hazards:

Vapors are heavier than air accumulating in low areas and traveling along the ground away from the handling site. Do not weld, heat or drill on or near container. However, if emergency situations require drilling, only trained emergency personnel should drill.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures:

DANGER! EXTREMELY FLAMMABLE! Eliminate potential sources of ignition. Handling equipment must be bonded and grounded to prevent sparking.

Spill Management:

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

Reporting:

U.S. regulations require reporting releases of this material to the environment which exceed the reportable quantity to the National Response Center at (800)424-8802.

CWA: This product is an oil as defined under Section 311 of EPA's Clean Water Act (CWA). Spills into or leading to surface waters that cause a sheen must be reported to the National Response Center, 1-800-424-8802.

SECTION 7 HANDLING AND STORAGE

Precautionary Measures:

Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet. Launder contaminated clothing before reuse. Properly dispose of contaminated leather articles such as shoes or belts that cannot be decontaminated. Avoid heat, open flames, including pilot lights, and strong oxidizing agents. Use explosion-proof ventilation to prevent vapor accumulation. Ground all handling equipment to prevent sparking. Do not siphon gasoline by mouth; harmful or fatal if swallowed. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

For use as a motor fuel only. Do not use as a cleaning solvent or for other non-motor fuel uses.

Handling:

Surfaces that are sufficiently hot may ignite liquid material. Material is extremely flammable and heavier than air. Vapors may travel across the ground and reach remote ignition sources causing a flashback fire danger.

Keep containers closed when not in use. WARNING! The flow of gasoline through the pump nozzle can produce static electricity, which may cause a fire if gasoline is pumped into an ungrounded container. To avoid static buildup, place approved container on the ground. Do not fill container in vehicle or truck bed. Keep nozzle in contact with container while filling. Do not use automatic pump handle (latch-open) device. Keep all storage vessels closed. Material will ignite when exposed to air. Air trapped within the storage container may be removed by placing dry ice in the container prior to closing. Turn off all battery operated portable electronic devices (examples include: cellular phones, pagers and CD players) before operating gasoline pump. Use only with adequate ventilation.

Storage:

Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures.

Keep liquid and vapor away from heat, sparks and flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapors have dissipated. Use explosion-proof ventilation indoors and in laboratory settings.

Container Warnings:

Keep containers closed when not in use. Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Benzene ACGIH TLV TWA: 0.5 ppmv STEL: 2.5 ppmv Notation: Skin
Benzene OSHA PEL TWA: 1 ppmv STEL: 5 ppmv
Ethanol ACGIH TLV TWA: 1000 ppmv
Ethyl Alcohol OSHA PEL TWA: 1000 ppmv
Gasoline ACGIH TLV TWA: 300 ppmv STEL: 500 ppmv
Gasoline OSHA PEL - 1989(revoked) TWA: 300 ppmv STEL: 500 ppmv
Toluene ACGIH TLV TWA: 50 ppmv Notation: Skin
Toluene OSHA PEL TWA: 200 ppmv Ceiling: 300 ppmv
Toluene OSHA PEL - 1989(revoked) TWA: 100 ppmv STEL: 150 ppmv
Toluene SHELL INTERNAL TWA: 50 ppmv
xylene (o-, m-, p- isomers) OSHA PEL TWA: 100 ppmv
xylene (o-, m-, p- isomers) OSHA PEL - 1989(revoked) TWA: 100 ppmv STEL: 150 ppmv
Xylene (o-, m-, p-isomers) ACGIH TLV TWA: 100 ppmv STEL: 150 ppmv
Carbon dioxide ACGIH - TLV TWA: 5000 ppmm STEL: 30000 ppmm
Carbon dioxide OSHA - PEL STEL: 30000 ppmm
Carbon dioxide OSHA - PEL_IS TWA: 10000 ppmm
Carbon monoxide OSHA - PEL TWA: 35 ppmv Ceiling: 200 ppmv
Carbon monoxide Combustion

EXPOSURE CONTROLS

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits.

PERSONAL PROTECTION

Personal protective equipment (PPE) selections vary based on potential exposure conditions such as handling practices, concentration and ventilation.

Information on the selection of eye, skin and respiratory protection for use with this material is provided below.

Eye Protection:

Chemical Goggles - If liquid contact is likely., or Safety glasses with side shields

Skin Protection:

Use protective clothing which is chemically resistant to this material. Selection of protective clothing depends on potential exposure conditions and may include gloves, boots, suits and other items. The selection(s) should take into account such factors as job task, type of exposure and durability requirements.

Published literature, test data and/or glove and clothing manufacturers indicate the best protection is provided by:
Neoprene, or Nitrile Rubber

Respiratory Protection:

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Types of respirator(s) to be considered in the selection process include:

For Vapors: Air Purifying, R or P style prefilter & organic cartridge, NIOSH approved respirator. Full face air supplied respirator if oxygen level is reduced below 19.5 %. Self-contained breathing apparatus for use in environments with unknown concentrations or emergency situations.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Clear liquid. Alcohol odor.
Substance Chemical Family: Alcohol
Appearance: Clear liquid.

Boiling Point: 173 °F Approximate

Flammability in Air: 1.3 %volume - 7.6 %volume

Flash Point: -40 °F [Tagliabue Closed Cup]

Specific Gravity: 0.79

Stability: Stable

Vapor Density: > 1

Viscosity: < 1.4 cSt @ 100 °F

SECTION 10 REACTIVITY AND STABILITY

Stability:
Material is stable under normal conditions.

Conditions to Avoid:
Avoid heat, sparks, open flames and other ignition sources.

Materials to Avoid:
Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products:
Thermal decomposition products are highly dependent on combustion conditions. A complex mixture of airborne solids, liquids and gases will evolve when this material undergoes pyrolysis or combustion. Aldehydes, Carbon Monoxide, Carbon Dioxide, Unidentified organic compounds, Peroxide, Styrene oxide and other unidentified organic compounds may be formed upon combustion.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute Toxicity

Dermal LD50 >2 g/kg(Rabbit) OSHA: Non-Toxic Based on components(s)
Eye Irritation Variable [Rabbit] OSHA: Irritating Based on components(s)
Inhalation LC50 >16,000 ppmv(Rat) OSHA: Non-Toxic Based on components(s)
Oral LD50 >5 ml/kg(Rat) OSHA: Non-Toxic Based on components(s)
Skin Irritation Draize 0.98 [Rabbit, 24 hour(s)] OSHA: Irritating Based on components(s)

Carcinogenicity:

Gasoline has been tested by API in a long-term inhalation test in mice and rats. There was an increased incidence of liver cancer in female mice. Male rats had a dose related increase in kidney tumors. This effect was due to formation of alpha-2u-globulin in the rats. This material is not formed in humans and is therefore not considered relevant.

Carcinogenicity Classification

Denatured Ethanol

NTP: No IARC: Yes ACGIH: No OSHA: No

Benzene

NTP: Yes IARC: Carcinogen (1) ACGIH: A1 OSHA: Yes

Ethyl Benzene

NTP: No IARC: Possible Carcinogen (2B) ACGIH: A3 OSHA: No

Toluene

NTP: No IARC: Not Classifiable (3) ACGIH: A4 OSHA: No

Unleaded Gasoline

NTP: No IARC: Possible Carcinogen (2B) ACGIH: A3 OSHA: No

Carcinogenicity

Chronic inhalation of wholly vaporized gasoline produced kidney tumors in male rats and liver tumors in female mice. The kidney tumors have been shown to develop through a unique mechanism involving Alpha-2u globulin. This protein is not present in humans making the kidney tumors irrelevant to potential human health risks. Origin of the female mouse liver tumors is less understood, leaving their significance for human risks uncertain. Prolonged and repeated exposure to high concentrations (10s to 100s ppm) of benzene may cause serious injury to blood-forming organs, is associated with anemia (depletion of blood cells) and is linked to the later development of acute myelogenous leukemia (AML) in humans. A recent chronic bioassay of ethylbenzene by the NTP produced clear evidence of carcinogenicity in male rats based on kidney tumor increase. Other animal tumors possibly associated with ethylbenzene include testicular adenomas in male rats, kidney tumors in female rats, lung tumors in male mice and liver tumors in female mice. Toluene is not known to be mutagenic or carcinogenic although available human and experimental animal data are limited and insufficient to assess carcinogenic potential.

Cardiovascular System

While there is no evidence that workplace exposure to acceptable levels of toluene vapors (e.g., the TLV) have produced cardiac effects in humans, high concentrations may cause cardiac sensitization and sudden lethality has been reported from habitual sniffing of solvents or glue. Animal studies have confirmed the sensitizing effects. Sensitization may lead to fatal changes in heart rhythms. Hypoxia or injection of adrenalin-like agents may enhance this effect. Thickening of heart blood vessels has been reported in animals exposed to xylene.

Developmental Toxicity

Daily exposure of pregnant rats to unleaded gasoline vapor at concentrations up to 9000 ppm resulted in no detectable maternal or developmental toxicity. Developmental toxicity studies of xylenes showed embryoletal/toxic and teratogenic effects with maternal toxicity. Many case studies involving abuse during pregnancy implicate toluene as a developmental toxicant. Studies in laboratory animals have shown developmental effects comparable to those reported in humans, but the effects were generally associated with maternal toxicity. Ethanol ingestion during pregnancy has been reported to cause birth defects in some infants.

Genotoxicity

Unleaded gasoline was tested for genetic activity in tests using microbial cells, cultured mammalian cells and rats (bone marrow) and was judged to be negative in every case. Toluene was negative in the Ames assay and negative for chromosomal aberrations and sister-chromatid exchanges in human lymphocytes and in an in vitro test using hamster cells. Mouse lymphoma test results for toluene were inconclusive.

Blood/Blood Forming Organs

Blood effects were seen in rats following prolonged and repeated oral exposure to a mixture of xylenes containing ethylbenzene.

Kidney

Long-term inhalation of wholly vaporized gasoline caused increased kidney weight and progressive nephropathy (tissue damage) in male rats. In rats exposed orally to a xylene mixture also containing ethylbenzene, males developed hyaline droplet changes and females showed evidence of early chronic nephropathy. Intentional abuse of toluene vapors by 'glue-sniffers' has been associated with damage to the kidneys.

Liver

Inhalation of gasoline vapor increased liver weights, urinary excretion of ascorbic acid, and hepatic enzyme activity in male rats. Liver weight increases were seen in rats dosed orally for 90 days with a xylene mixture also containing ethylbenzene. Reversible liver damage has been reported in persons exposed to toluene by solvent abuse. Prolonged and repeated consumption of ethanol has been shown to cause liver damage in animals and cirrhosis in humans.

Neurotoxicity

Rats receiving prolonged and repeated exposure to high doses of xylene have shown hearing loss. Prolonged and repeated exposures to high toluene concentrations (mixed solvent) have resulted in hearing loss in laboratory animals. There have also been reports of hearing damage in humans overexposed to toluene and other solvents, however, these effects and their possible relationship to noise exposure remain uncertain. Intentional inhalation ('glue-sniffing') and resulting overexposure to toluene vapors has been linked to brain injury.

Sensitization

Gasoline and component petroleum streams blended to produce it were tested in animal studies and found not to cause skin sensitization.

Systemic Toxicity

Laboratory animals exposed to prolonged and repeated doses of xylenes by various routes have shown effects in liver, kidneys, lungs, spleen, heart, blood and adrenals. Persons on disulfiram (Antabuse(R)) therapy should be aware that the ethyl alcohol in this product is hazardous to them just as is alcohol from any source. Disulfiram reactions (vomiting, headache and even collapse) may follow ingestion of small amounts of alcohol and have also been described from skin contact.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Impact Summary:

There is no ecological data available for this product.

SECTION 13 DISPOSAL CONSIDERATIONS

RCRA Information:

Under RCRA, it is the responsibility of the user of the material to determine, at the time of the disposal, whether the material meets RCRA criteria for hazardous waste. This is because material uses, transformations, mixtures, processes, etc. may affect the classification. Refer to the latest EPA, state and local regulations regarding proper disposal.

SECTION 14 TRANSPORT INFORMATION

US Department of Transportation Classification

Proper Shipping Name: Alcohols, N.O.S. (Contains Ethanol and Gasoline)
Technical Names (s): Ethanol, Gasoline
Identification Number: UN1987
Hazard Class/Division: 3 (Flammable Liquid)
Packing Group: II
Marine Pollutant % of Total:
Marine Pollutant: Marine Pollutant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.
Emergency Response Guide # 127

International Air Transport Association

Hazard Class/Division: 3 (Flammable Liquid)
Identification Number: UN1987
Packing Group: II
Proper Shipping Name: Alcohols, N.O.S. (Contains Ethanol and Gasoline)
Technical Name(s): Ethanol, Gasoline

International Maritime Organization Classification

Hazard Class/Division: 3 (Flammable Liquid)
Identification Number: UN1987
Packing Group: II
Proper Shipping Name: Alcohols, N.O.S.
Technical Name(s): Ethanol, Gasoline

SECTION 15 REGULATORY INFORMATION

FEDERAL REGULATORY STATUS

OSHA Classification:

Product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Comprehensive Environmental Release, Compensation & Liability Act (CERCLA):
Benzene RQ 10 lbs Reportable Spill => 4097 lbs or 683 gal

Ozone Depleting Substances (40 CFR 82 Clean Air Act):

This material does not contain nor was it directly manufactured with any Class I or Class II ozone depleting substances.

Superfund Amendment & Reauthorization Act (SARA) Title III:

There are no components in this product on the SARA 302 list.

SARA Hazard Categories (311/312):

Immediate Health:YES Delayed Health:YES Fire:YES Pressure:NO
Reactivity:NO

SARA Toxic Release Inventory (TRI) (313):

Xylene (mixed isomers), Toluene, Ethylbenzene, Benzene

Toxic Substances Control Act (TSCA) Status:

All component(s) of this material is(are) listed on the EPA/TSCA Inventory of Chemical Substances.

Other Chemical Inventories:

Australian AICS, Chinese Inventory, European EINECS, Japan ENCS, Korean Inventory, Philippines PICCS,

State Regulation

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65).

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

New Jersey Right-To-Know Chemical List:

Benzene (71-43-2) 0 - 0.24 %weight Carcinogen
Benzene (71-43-2) 0 - 0.24 %weight Mutagen
Benzene, Methyl- (108-88-3) 0 - 1.49 %weight
Ethanol (64-17-5) 95 - 99.99 %weight
Xylenes (1330-20-7) 0 - 1.49 %weight

Pennsylvania Right-To-Know Chemical List:

Benzene (71-43-2) 0 - 0.24 %weight Spec Haz Sub/Env Hazardous
Benzene, dimethyl- (1330-20-7) 0 - 1.49 %weight Environmental Hazard
Benzene, Methyl- (108-88-3) 0 - 1.49 %weight Environmental Hazard
Ethanol (64-17-5) 95 - 99.99 %weight

SECTION 16 OTHER INFORMATION

Revision#: 2

Revision Date: 04/14/2003

Revisions since last change (discussion): This Material Safety Data Sheet (MSDS) has been newly reviewed to fully comply with the guidance contained in the ANSI MSDS standard (ANSI Z400.1-1998). We encourage you to take the opportunity to read the MSDS and review the information contained therein.

SECTION 17 LABEL INFORMATION

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

PRODUCT CODE(S): 05482

Denatured Ethanol

DANGER!

EXTREMELY FLAMMABLE. VAPORS MAY EXPLODE. CAUSES SEVERE EYE IRRITATION. OVEREXPOSURE TO VAPORS CAN CAUSE CNS DEPRESSION. MAY CAUSE SKIN IRRITATION. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. CONTAINS BENZENE WHICH IS A CANCER HAZARD - LINKED TO DEVELOPMENT OF ACUTE MYELOGENOUS LEUKEMIA. PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE OIL ACNE OR DERMATITIS. LONG-TERM EXPOSURE TO GASOLINE VAPORS HAS CAUSED CANCER IN LABORATORY ANIMALS.

MAY CAUSE DAMAGE TO: Cardiovascular System, Blood/Blood Forming Organs, Kidney, Liver

Refer to Section 11, Toxicological Information, for specific information on the following effects:

Developmental Toxicity, Genotoxicity

Precautionary Measures:

Avoid contact with skin and clothing. Avoid heat, sparks, open flames and other ignition sources. Avoid breathing of vapors, fumes, or mist. Do not take internally. Use only with adequate ventilation. Keep container closed when not in use. Wash thoroughly after handling.

FIRST AID

Inhalation: Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. DO NOT attempt to rescue victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin Contact: Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye Contact: Immediately flush eyes with large amounts of water for at least 30 minutes, by the clock, while holding eyelids open. Transport to nearest medical facility for additional treatment.

Ingestion: DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

FIRE

In case of fire, Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

SPILL OR LEAK

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

CONTAINS: Ethanol, 64-17-5; Unleaded Gasoline, Mixture; Toluene, 108-88-3; Xylene, mixed isomers, 1330-20-7; Benzene, 71-43-2; Ethyl Benzene, 100-41-4; Miscellaneous Hydrocarbons,

NFPA Rating (Health, Fire, Reactivity): 1, 3, 0

TRANSPORTATION

US Department of Transportation Classification

Proper Shipping Name: Alcohols, N.O.S. (Contains Ethanol and Gasoline)

Technical Names (s): Ethanol, Gasoline

Identification Number: UN1987

Hazard Class/Division: 3 (Flammable Liquid)

Packing Group: II

Marine Pollutant % of Total:

Marine Pollutant: Marine Pollutant based on the presence of >10% hydrocarbons listed in 49 CFR 172.101, appendix B; main constituents Trimethylbenzene and Naphthalene.

Emergency Response Guide # 127

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65).

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

WARNING: This product contains a chemical(s) known to the State of California to cause birth defects or other reproductive harm.

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flames or heat. Keep container closed and drum bungs in place.

Name and Address

Motiva Enterprises LLC
P.O. Box 4540
Houston, TX 77210-4540

ADMINISTRATIVE INFORMATION

MANUFACTURER ADDRESS: Motiva Enterprises LLC, P.O. Box 4540, Houston, TX. 77210-4540

Company Product Stewardship & Regulatory Compliance Contact: David Snyder
Phone Number: (281) 874-7728

THE INFORMATION CONTAINED IN THIS DATA SHEET IS BASED ON THE DATA AVAILABLE TO US AT THIS TIME, AND IS BELIEVED TO BE ACCURATE BASED UPON THAT : IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT, FOR PURPOSE OF HAZARD COMMUNICATION. IT IS NOT INTENDED TO CONSTITUTE PRODUCT PERFORMANCE INFORMATION, AND NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND IS MADE WITH RESPECT TO THE PRODUCT, UNDERLYING DATA OR THE INFORMATION CONTAINED HEREIN. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE, AND ARE ENCOURAGED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE THE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, YOU SHOULD CONSULT WITH YOUR LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. WE WILL NOT PROVIDE ADVICE ON SUCH MATTERS, OR BE RESPONSIBLE FOR ANY INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN. THE UNDERLYING DATA, AND THE INFORMATION PROVIDED HEREIN AS A RESULT OF THAT DATA, IS THE PROPERTY OF MOTIVA ENTERPRISES LLC AND IS NOT TO BE THE SUBJECT OF SALE OR EXCHANGE WITHOUT THE EXPRESS WRITTEN CONSENT OF MOTIVA ENTERPRISES LLC.

36914-12060-100R-04/17/2003

Annex 11 – Road Transport Emergency Response Plan

This Plan is for the Facility only; no part of it is sent to an agency.

ROAD TRANSPORT EMERGENCY RESPONSE

for

Motiva Enterprises LLC

Purpose

The purpose this document is to provide a template of an emergency response plan covering the transportation of products (includes the loading, transport and unloading) that meets the requirements of the Road Transport Standard.

I. INTRODUCTION

This plan outlines the steps to be taken in handling various accidents involving road transport. The intent of the plan is to provide guidance on responding to the incident and thereby prevent injuries to people or damage to property and the environment.

This plan also sets forth the manner of response to discharges of petroleum products that may occur during transportation and meets the basic response plan requirements of 49 CFR 130.31(a) for a single package containing 3,500 gallons or more.

The largest single package transported in under this plan is 12,500 gallons.

Every employee likely to be involved in the implementation and control must be fully conversant with the procedures detailed in this plan.

II ACCOUNTABILITY

1. Management - Ensure that the steps outlined in this plan are communicated and followed.
2. Affected Vehicle Operators (Driver) - Follow and have a good understanding of the steps outlined in this plan.
3. Emergency Response Contractor(s) – With the assistance of the HSSE department, will clean up the hazardous materials spill and assist in the proper disposal of all contaminated materials associated with the spill. In addition, when directed, assist in contacting applicable agencies and filling out applicable reports.

4. Supervisor(s) - Oversee and assume responsibility for the cleanup operation to ensure that the cleanup materials are properly managed and disposed of.
 - a. Contact your HSSE representative for assistance with the plan.
 - b. Notify all applicable government agencies.
5. HSSE Representative – Assist in implementing this plan.

III GENERAL PROCEDURES (Accidents)

Note: Safety to people must come first. Employees must never take any actions that would put themselves or others in harm's way.

1. Driver First Response in the Event of a Vehicle Accident or Rollover

If driver is unhurt, he should assume initial control at the scene, and:

 - a. Switch off engine and disconnect power via the vehicle master power isolating switch (if equipped).
 - b. Ask involved parties if they need medical attention.
 - c. Call emergency services 911 (police, fire, ambulance as needed).
 - d. Verify that all valves are closed to limit the possibility of a spill.
 - e. Keep public at a safe distance.
 - f. Prevent smoking and remove sources of ignition.
 - g. Place safety triangles, cones, and fire extinguishers.
 - h. Contact supervisor or manager as soon as it is safe to do so.
 - i. Assess damage to the tanker or vehicle.
 - j. If rollover, contact a cargo tank truck specialist and tow service. If product is on board the tank truck, a pump truck will be required.

2. Road Incidents (Loss of Product or Cargo)

In addition to the items in section 11.1.4.1, drivers and/or supervisors should:

- a. Keep the public away from the area and upwind of the spill.
- b. Attempt to stop any further leakage/spillage by closing product valves or by other means if it can be done safely. "Safely" is being able to stop further leakage or spillage while not coming into contact with the spilled material. Exposure to spilled material must be minimized.
- c. Prevent leak or spillage from entering any sewer or drain by using spill pads, booms, dirt or sand bags, or by covering grating with a plastic tarp. Only deploy this material downstream of the leading edge of the spilled material and keep exposure to spilled material at a minimum.
- d. Immediately notify the Order Management Center at 1-800-990-5070. They will in turn contact the Delivery Support Manager and/or the Director of Order Management & Trucking.
- e. Under no circumstance should the driver, if unharmed, able and fit, abandon the vehicle until a responsible senior staff member of the company arrives at the scene and relieves him. The driver should keep a safe distance from any hazards.

3. Road Incidents (Fire Involving the Equipment on the Vehicle)

In addition to the items in section 11.1.4.1, drivers and/or supervisors should:

- a. Use fire extinguishers if small, incipient stage fire involving the vehicle or vehicle equipment occurs. Fire extinguishers should only be used by trained employees and only if it can be done without risk of injury.

4. Road Incidents (Fire Involving the Cargo)

In addition to the items in section 11.1.4.1, drivers and/or supervisors should:

- a. Notify the fire department of the situation and the products involved. The fire department may need to find a source of fire fighting foam when petroleum products are involved.

- b. Fires involving the cargo are rarely manageable with a fire extinguisher and should not be combated by the employee.
- c. Increase the safe distance around the vehicle and avoid the smoke from the fire.

5. Road Incident (Vehicle Breakdown)

- a. Move the vehicle as far from the traveled portion of the highway as possible.
- b. Fully apply the parking brake.
- c. Place wheel blocks/chocks.
- d. Place emergency reflective triangles to warn traffic.
- e. Call your supervisor or other repair companies as directed by local procedures.
- f. The driver must remain with the vehicle at all times until help arrives.
- g. The driver should advise the public to keep clear of the vehicle and should not permit smoking or allow ignition sources near the vehicle.
- h. Depending on the circumstances, have the fire extinguishers in an easily accessible and safe place up wind of the vehicle and ready for use in an emergency.

6. Road Incidents (Hijack)

- a. Do not attempt to resist the hijacker.
- b. Gather as much information as possible about the hijackers, vehicles they may have used, direction of travel, the license plate and description of our vehicle, and the products that are in our vehicle.
- c. Call 911 to report the incident.
- d. Call your supervisor to report the incident.

7. Medical Incident Recovery Measures

Note: Employees are not trained to provide medical aid to others. First aid kits supplied on vehicles are for the use of the driver to treat his or her own injuries until medical help arrives. Employees are not expected or required to treat others and in doing so will be acting of their own accord.

- a. In the event of medical emergencies contact 911 and advise the operator of the situation.
- b. Notify your supervisor of the situation as soon as possible.

8. Annual Drills

- a. Annual drills covering road transport shall be conducted by each facility. Each year, the drill should address a different type of hazard i.e. tornado, fire, bomb threat, hijacking, etc.

IV GENERAL PROCEDURES (SPILLS)

1. Minor Spill

In addition to the items in section III.1, drivers and/or supervisors should :

- a. Immediately stop and contain the spill at its source.
- b. Clean up the spill using supplied materials.
- c. Place all used spill response equipment/absorbents into a trash bag(s) and properly transport, dispose of, or recycle these materials according to guidance from the HSSE department. Do not transport materials from the spill site without guidance from the Environmental Group.
- d. Contact his or her supervisor/manager immediately after containing and/or cleaning up the spill and provide a description of the spill and how it was cleaned up. The spill must be reported and investigated in accordance with SOP US and Motiva Incident Notification and Investigation HSSE Standards.

2. Major Spill

In addition to the items in Section 11.1.4.1, drivers and/or supervisors should:

- a. If the likelihood of a fire or explosion exists, drivers should evacuate the immediate area and call the local fire department using 911 or an alternative emergency number.
- b. If it can be done safely, the driver should immediately stop and contain the spill at its source and keep unauthorized persons outside of the spill area. "Safely" is being able to stop further leakage or spillage while not coming into contact with the spilled material. Exposure to spilled material must be minimized.
- c. The Terminal Superintendent/Delivery Supervisor must report a Major Spill to the Shell Oil Products U.S. HSEQ Emergency Management 24 hour hot line (1-877-242-7400). This includes any amount of spill that reaches a body of water or sewer system. They will in turn contact the Delivery Support Manager. Be prepared to describe the:
 - i. Exact location of spill,
 - ii. Injuries to self and others,
 - iii. Volume of product released,
 - iv. Affected storm drains and/or water bodies,
 - v. Damage to equipment and property, and
 - vi. Name of driver and the phone number they can be reached at.
- d. If additional outside assistance is needed to clean up the spill, contact the approved OSROs as listed in the Plan.
- e. The driver and/or the Emergency Response Contractor shall collect all materials used in cleaning up the spill and properly dispose or recycle these materials according to guidance from the HSSE Department.
- f. The Delivery Supervisor or Terminal Superintendent will make appropriate notifications to the National Response Center (1-800-424-8802) as required.

- g. The Supervisor or Superintendent must follow up according to the requirements of the SOP US and Motiva Incident Notification and Investigation HSSE Standards.

V. TRAINING

1. Employees covered by this Plan shall review its contents annually.
2. Documentation of the initial training and refresher training will be maintained for a period of 5 years.
3. Those **responding** to either a hazardous material or hazardous substance spill must first have the applicable HAZWOPER training.

VI. DOCUMENT CONTROL

Training records must contain at a minimum the:

- a. Name of the instructor,
- b. Name of the student,
- c. Student's signature or equivalent,
- d. Date of the training,
- e. Materials used in the training, and
- f. Facility location where the training session was performed.

Training records will be maintained at the local office and entered into Mockingbird.

Training records will be maintained for a period of 5 years.

VII RESPONDING TO CARRIER ACCIDENTS

In the event of a significant incident involving a carrier under Motiva's operational control, it is required that a SOP US or Motiva Enterprises employee, ideally a Supervisor or Superintendent, be on site. The Company representative must initiate a timely investigation and gather information as directed by the Director of Trucking or the Manager of Delivery Support.

Significant incidents include but are not limited to:

- a. An incident of impact resulting in significant media coverage and public concern
- b. Product spill/leak/release that results in soil, surface water or potential/actual groundwater contamination.
- c. Any work-related contractor fatality occurring on or off company property.
- d. Road closures due to an incident.

The company representative will need to provide an outline of the nature and severity of the event, including the number of injuries, extent of injuries, whether hospitalization was required, involving third parties and/or the driver.

VIII VEHICLE SPILL RESPONSE EQUIPMENT LIST

Vehicle emergency equipment - each transportation vehicle with a capacity of 3,500 gallons or more will carry at a minimum:

10 Absorbent Pads

2 10' Absorbent Socks

Gloves

Disposable Bag

IX DEFINITIONS

DOT - United States Department of Transportation

HAZWOPER - Hazardous Waste Operations and Emergency Response (OSHA Standard)

HSSE – Health, Safety, Security, and Environment Department

Land Conditions - Hills, slopes, ditches, mountains, valleys, etc.

Major Spill - A spill that may require outside assistance to remove, and/or that impacts a storm drain or body of water. All major spills must be reported to the Shell Oil Products U.S. HSEQ Emergency Management 24 hour hot line (1-877-242-7400) and follow up according to the requirements of the SOP US and Motiva Incident Notification and Investigation HSSE Standards.

Note: A major spill may also be a Reportable Spill (see definition). In this case, the National Response Center (1-800-424-8802) and possibly a state and/or local regulatory agency must be notified. Refer to the Core Plan at the beginning of this manual for all Agency/Emergency contact numbers.

Minor Spill – A spill that is small enough to be easily cleaned up by the driver and which does not impact a storm drain or body of water. Some states require certain minor spills to be reported. Contact your HSSE Environmental Coordinator for guidance. The spill details need to be reported via the online IRM system.

Under Operational Control – Delivering products on behalf of Shell or Motiva.

X OIL SPILL DATA LOG

Following this procedure will help facilitate emergency response operations for oil spills and other environmental concerns.

Refer to the Core Plan at the beginning of this manual for all Agency/Emergency contact numbers.

Please be prepared to provide the following information to the appropriate person or agencies: The incident's location, specific address, the closest highway mile marker to the incident, the nearest town or city, and the name and contact number of the person making the call.

City: _____ State: _____

Person reporting spill: _____ Phone Number: _____

Responsible party: _____ Phone Number: _____

On scene contact: _____ Phone number: _____

Description of incident (injuries, type and volume of spill, weather and land conditions, damage to property and equipment, etc.)

Surface affected: Soil/grass ☐ Asphalt ☐ Concrete ☐

Water affected Surface ☐ Groundwater ☐ Coastal ☐

Sensitive receptors (e.g. storm sewer, drainage ditch): _____

Note any initial actions that may have been taken to control the incident.

Contacts Made and Reporting Results (Example: 911 or Shell Emergency Response):

Contact 1: Name _____

Person's Name: _____

Phone Number: _____

Information Reported: _____

Information Received (Ex: Incident Number): _____

Contact 2: Name _____

Person's Name: _____

Phone Number: _____

Information Reported: _____

Information Received (Ex: Incident Number): _____

Contact 3: Name _____

Person's Name: _____

Phone Number: _____

Information Reported: _____

Information Received (Ex: Incident Number): _____

Contact 4: Name _____

Person's Name: _____

Phone Number: _____

Information Reported: _____

Information Received (Ex: Incident Number): _____

ANNEX 12..GLOSSARY OF TERMS/ACRONYMS

This glossary contains definitions of terms that will be used frequently during the course of response operations.

Activate: The process of mobilizing personnel and/or equipment within the response organization to engage in response operations.

Activator: An individual in the response organization whose responsibilities include notifying other individuals or groups within the organization to mobilize personnel and/or equipment.

Adverse Weather: The weather conditions that will be considered when identifying response systems and equipment in a response plan for the applicable operating environment. Factors to consider include significant wave height, ice, temperature, weather-related visibility, and currents within the Captain of the Port (COTP) zone in which the systems or equipment are intended to function.

Agency Representative: Individual assigned to an incident from an agency who has been delegated full authority to make decisions on all matters affecting that agency's participation in response operations.

Area Committee: As defined by Sections 311(a)(18) and (j)(4) of CWA, as amended by OPA, means the entity appointed by the President consisting of members from Federal, State, and local agencies with responsibilities that include preparing an Area Contingency Plan for the area designated by the President. The Area Committee may include ex-officio (i.e., non-voting) members (e.g., industry and local interest groups).

Area Contingency Plan: As defined by Sections 311(a)(19) and (j)(4) of CWA, as amended by OPA, means the plan prepared by an Area Committee, that in conjunction with the NCP, shall address the removal of a discharge including a worst-case discharge and the mitigation or prevention of a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operating in or near an area designated by the President.

Average Most Probable Discharge: A discharge of the lesser of 50 barrels or 1% of the volume of the worst case discharge.

AWAY Team: A predesignated team from various departments in Houston, is responsible for arriving at the scene of an oil spill incident as soon as possible to provide both immediate and longer-term management of the field activities.

Barrel (bbl): Measure of space occupied by 42 U.S. gallons at 60 degrees Fahrenheit.

Bioremediation Agents: Means microbiological cultures, enzyme additives, or nutrient additives that are deliberately introduced into an oil discharge and that will significantly increase the rate of biodegradation to mitigate the effects of the discharge.

Boom: A piece of equipment or a strategy used to either contain free floating oil to a confined area or protect an uncontaminated area from intrusion by oil.

Booming Strategies: Strategic techniques which identify the location and quantity of boom required to protect certain areas. These techniques are generated by identifying a potential spill source and assuming certain conditions which would affect spill movement on water.

Bulk: Material that is stored or transported in a loose, unpackaged liquid, powder, or granular form capable of being conveyed by a pipe, bucket, chute, or belt system.

Chemical Agents: Means those elements, compounds, or mixtures that coagulate, disperse, dissolve, emulsify, foam, neutralize, precipitate, reduce, solubilize, oxidize, concentrate, congeal, entrap, fix, make the pollutant mass more rigid or viscous, or otherwise facilitate the mitigation of deleterious effects or the removal of the oil pollutant from the water. Chemical agents include biological additives, dispersants, sinking agents, miscellaneous oil spill control agents, and burning agents, but do not include solvents.

Clean-up Contractor: Persons contracted to undertake a response action to clean up a spill.

Cleanup: For the purposes of this document, cleanup refers to the removal and/or treatment of oil, hazardous substances, and/or the waste or contaminated materials generated by the incident. Cleanup includes restoration of the site and its natural resources.

Coastal Waters: For the purpose of classifying the size of discharges, means the waters of the coastal zone except for the Great Lakes and specified ports and harbors on inland rivers.

Coastal Zone: As defined for the purpose of the NCP, means all United States waters subject to the tide, United States waters of the Great Lakes, specified ports and harbors on inland rivers, waters of the contiguous zone, other waters of the high seas subject to the NCP, and the land surface or land substrata, ground waters, and ambient air proximal to those waters. The term coastal zone delineates an area of federal responsibility for response action. Precise boundaries are determined by EPA/USCG agreements and identified in federal regional contingency plans.

Coast Guard District Response Ground (DRG): As provided for by CWA sections 311(a)(20) and (j)(3), means the entity established by the Secretary of the department in which the USCG is operating within each USCG district and shall consist of: the combined USCG personnel and equipment, including firefighting equipment, of each port within the district; additional prepositioned response equipment; and a district response advisory team.

Command: The act of controlling manpower and equipment resources by virtue of explicit or delegated authority.

Command Post: A site located at a safe distance from the spill site where response decisions are made, equipment and manpower deployed, and communications handled. The Incident Commander and the On-Scene Coordinators may direct the on-scene response from this location.

Communications Equipment: Equipment that will be utilized during response operations to maintain communication between the Company employees, contractors, Federal/State/Local agencies. (Radio/telephone equipment and links)

Containment Boom: A flotation/freeboard device, made with a skirt/curtain, longitudinal strength member, and ballast unit/weight designed to entrap and contain the product for recovery.

Contingency Plan: A document used by (1) federal, state, and local agencies to guide their planning and response procedures regarding spills of oil, hazardous substances, or other emergencies; (2) a document used by industry as a response plan to spills of oil, hazardous substances, or other emergencies occurring upon their vessels or at their facilities.

Contract or Other Approved Means: For OPA 90, a written contract with a response contractor; certification by the facility owner or operator that personnel and equipment are owned, operated, or under the direct control of the facility, and available

within the stipulated times; active membership in a local or regional oil spill removal organization; and/or the facility's own equipment.

Critical Areas to Monitor: Areas which if impacted by spilled oil may result in threats to public safety or health.

Cultural Resources: Current, historic, prehistoric and archaeological resources which include deposits, structures, ruins, sites, buildings, graves, artifacts, fossils, or other objects of antiquity which provide information pertaining to the historical or prehistorical culture of people in the state as well as to the natural history of the state.

Damage Assessment: The process of determining and measuring damages and injury to the human environment and natural resources, including cultural resources. Damages include differences between the conditions and use of natural resources and the human environment that would have occurred without the incident, and the conditions and use that ensued following the incident. Damage assessment includes planning for restoration and determining the costs of restoration.

Decontamination: The removal of hazardous substances from personnel and their equipment necessary to prevent adverse health effects.

Discharge: Any spilling, leaking, pumping, pouring, emitting, emptying, or dumping.

Dispersants: Means those chemical agents that emulsify, disperse, or solubilize oil into the water column or promote the surface spreading of oil slicks to facilitate dispersal of the oil into the water column.

Diversions Boom: A flotation/freeboard device, made with a skirt/curtain, longitudinal strength member, and ballast unit/weight designed to deflect or divert the product towards a pick up point, or away from certain areas.

Drinking Water Supply: As defined by Section 101(7) of CERCLA, means any raw or finished water source that is or may be used by a public water system (as defined in the Safe Drinking Water Act) or as drinking water by one or more individuals.

EM: Emergency Management. Serves as the focal point for senior management support of an incident.

Economically Sensitive Areas: Those areas of explicit economic importance to the public that due to their proximity to potential spill sources may require special protection and include, but are not limited to: potable and industrial water intakes; locks and dams; and public and private marinas.

Emergency Management: The personnel identified to staff the organizational structure identified in a response plan to manage response plan implementation.

Emergency Service: Those activities provided by state and local government to prepare for and carry out any activity to prevent, minimize, respond to, or recover from an emergency.

Environmentally Sensitive Areas: Streams and water bodies, aquifer recharge zones, springs, wetlands, agricultural areas, bird rookeries, endangered or threatened species (flora and fauna) habitat, wildlife preserves or conservation areas, parks, beaches, dunes, or any other area protected or managed for its natural resource value.

Facility: Either an onshore facility or an offshore facility and includes, but is not limited to structures, equipment, and appurtenances thereto, used or capable of being used to transfer oil to or from a vessel or a public vessel. A facility includes federal, state, municipal, and private facilities.

Facility Operator: The person who owns, operates, or is responsible for the operation of the facility.

Federal Fund: The spill liability trust fund established under OPA.

Federal Regional Response Team: The federal response organization (consisting of representatives from selected federal and state agencies) which acts as a regional body responsible for planning and preparedness before an oil spill occurs and providing advice to the FOSC in the event of a major or substantial spill.

Federal Response Plan (FRP): Means the agreement signed by 25 federal departments and agencies in April 1987 and developed under the authorities of the Earthquake Hazards Reduction Act of 1977 and the Disaster Relief Act of 1974, as amended by the Stafford Disaster Relief Act of 1988.

First Responders, First Response Agency: A public health or safety agency (e.g., fire service or police department) charged with responding to a spill during the emergency phase and alleviating immediate danger to human life, health, safety, or property.

Handle: To transfer, transport, pump, treat, process, store, dispose of, drill for, or produce.

Harmful Quantity Of Oil: The presence of oil from an unauthorized discharge in a quantity sufficient either to create a visible film or sheen upon or discoloration of the surface of the water or a shoreline, tidal flat, beach, or marsh, or to cause a sludge or emulsion to be deposited beneath the surface of the water or on a shoreline, tidal flat, beach, or marsh.

Hazardous Material: Any nonradioactive solid, liquid, or gaseous substance which, when uncontrolled, may be harmful to humans, animals, or the environment. Including but not limited to substances otherwise defined as hazardous wastes, dangerous wastes, extremely hazardous wastes, oil, or pollutants.

Hazardous Substance: Any substance designed as such by the Administrator of the EPA pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act; regulated pursuant to Section 311 of the Federal Water Pollution Control Act, or discharged by the SERC.

Hazardous Waste: Any solid waste identified or listed as a hazardous waste by the Administrator of the EPA pursuant to the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), 42 U.S.C., Section 6901, et seq as amended. The EPA Administrator has identified the characteristics of hazardous wastes and listed certain wastes as hazardous in Title 40 of the Code of Federal Regulations, Part 261, Subparts C and D respectively.

HAZMAT: Hazardous materials or hazardous substances, exposure to which may result in adverse effects on health or safety of employees.

HAZWOPER: Hazardous Waste Operations and Emergency Response Regulations published by OSHA to cover worker safety and health aspects of response operations.

Heat Stress: Dangerous physical condition caused by over exposure to extremely high temperatures.

Hypothermia: Dangerous physical condition caused by over exposure to freezing temperatures.

Incident: Any event that results in a spill or release of oil or hazardous materials. Action by emergency service personnel may be required to prevent or minimize loss of life or damage to property and/or natural resources.

Incident Briefing Meeting: Held to develop a comprehensive, accurate, and up-to-date understanding of the incident, nature of status of control operations, and nature and status of response operations; ensure the adequacy of control and response operations; begin to organize control and response operations; and prepare for interactions with outside world.

Incident Command Post (ICP): That location at which all primary command functions are executed.

Incident Command System (ICS): The combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, with responsibility for the management of assigned resources at an incident.

Incident Commander (IC): The one individual in charge at any given time of an incident. The Incident Commander will be responsible for establishing a unified command with all on-scene coordinators.

Indian Tribe: As defined in OPA section 1001, means any Indian tribe, band, nation, or other organized group or community, but not including any Alaska Native regional or village corporation, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians and has governmental authority over lands belonging to or controlled by the Tribe.

Initial Cleanup: Remedial action at a site to eliminate acute hazards associated with a spill. An initial clean-up action is implemented at a site when a spill of material is an actual or potentially imminent threat to public health or the environment, or difficulty of cleanup increases significantly without timely remedial action. All sites must be evaluated to determine whether initial cleanup is total cleanup, however, this will not be possible in all cases due to site conditions (i.e., a site where overland transport or flooding may occur).

Initial Notification: The process of notifying necessary the Company personnel and Federal/State/Local agencies that a spill has occurred, including all pertinent available information surrounding the incident.

Initial Response Actions: The immediate actions that are to be taken by the spill observer after detection of a spill.

Inland Area means the area shoreward of the boundary lines defined in 46 CFR part 7, except that in the Gulf of Mexico, it means the area shoreward of the lines of demarcation (COLREG lines) as defined in §80.740 through 80.850 of this chapter. The inland area does not include the Great Lakes.

Inland Waters: State waters not considered coastal waters; lakes, rivers, ponds, streams, underground water, et. al.

Inland Zone: Means the environment inland of the coastal zone excluding the Great Lakes, and specified ports and harbors on inland rivers. The term inland zone delineates an area of federal responsibility for response action. Precise boundaries are determined by EPA/USCG agreements and identified in federal regional contingency plans.

Interim Storage Site: A site used to temporarily store recovered oil or oily waste until the recovered oil or oily waste is disposed of at a permanent disposal site. Interim storage sites include trucks, barges, and other vehicles, used to store waste until the transport begins.

Lead Agency: The government agency that assumes the lead for directing response activities.

Lead Federal Agency: The agency which coordinates the federal response to incident on navigable waters. The lead federal agencies are:

- **U.S. Coast Guard:** Oil and chemically hazardous materials incidents on navigable waters.
- **Environmental Protection Agency:** Oil and chemically hazardous materials incidents on inland waters.

Lead State Agency: The agency which coordinates state support to federal and/or local governments or assumes the lead in the absence of federal response.

Loading: Transfer from Facility to vehicle.

Local Emergency Planning Committee (LEPC): A group of local representatives appointed by the State Emergency Response Commission (SERC) to prepare a comprehensive emergency plan for the local emergency planning district, as required by the Emergency Planning and Community Right-to-know Act (EPCRA).

Local Response Team: Designated Facility individuals who will fulfill the roles determined in the oil spill response plan in the event of an oil or hazardous substance spill. They will supervise and control all response and clean-up operations.

Lower Explosive Limit: Air measurement utilized to determine the lowest concentration of vapors that support combustion. This measurement must be made prior to entry into a spill area.

Marinas: Small harbors with docks, services, etc. for pleasure craft.

Medium Discharge: Means a discharge greater than 2,100 gallons (50 Bbls) and less than or equal to 36,000 gallons (85+ Bbls) or 10% of the capacity of the largest tank, whichever is less and not to exceed the WCD.

National Contingency Plan: The plan prepared under the Federal Water Pollution Control Act (33 United State Code §1321 et seq) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 United State Code § 9601 et seq), as revised from time to time.

National Pollution Funds Center (NPFC): Means the entity established by the Secretary of Transportation whose function is the administration of the Oil Spill Liability Trust Fund (OSLTF). Among the NPFC's duties are: providing appropriate access to the OSLTF for federal agencies and states for removal actions and for federal trustees to initiate the assessment of natural resource damages; providing appropriate access to the OSLTF for claims; and coordinating cost recovery efforts.

National Response System (NRS): Is the mechanism for coordinating response actions by all levels of government in support of the OSC. The NRS is composed of the NRT, RRTs, OSC, Area Committees, and Special Teams and related support entities.

National Strike Force (NSF): Is a special team established by the USCG, including the three USCG Strike Teams, the Public Information Assist Team (PIAT), and the National Strike Force Coordination Center. The NSF is available to assist OSCs in their preparedness and response duties.

National Strike Force Coordination Center (NSFCC): Authorized as the National Response Unit by CWA section 311(a)(23) and (j)(2), means the entity established by the Secretary of the department in which the USCG is operating at Elizabeth City, North Carolina, with responsibilities that include

administration of the USCG Strike Teams, maintenance of response equipment inventories and logistic networks, and conducting a national exercise program.

Natural Resource: Land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to or otherwise controlled by the state, federal government, private parties, or a municipality.

Navigable Waters: As defined by 40 CFR 110.1 means the waters of the United States, including the territorial seas. The term includes:

All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;

Interstate waters, including interstate wetlands;

All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, and wetlands, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters;

That are or could be used by interstate or foreign travelers for recreational or other purposes;

From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; and

That are used or could be used for industrial purposes by industries in interstate commerce.

All impoundments of waters otherwise defined as navigable waters under this section;

Tributaries of waters identified in paragraphs (a) through (d) of this definition, including adjacent wetlands; and

Wetlands adjacent to waters identified in paragraphs (a) through (e) of this definition: Provided, that waste treatment systems (other than cooling ponds meeting the criteria of this paragraph) are not waters of the United States.

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act jurisdiction remains with EPA.

Nearshore Area: For OPA 90, the area extending seaward 12 miles from the boundary lines defined in 46 CFR Part 7, except in the Gulf of Mexico. In the Gulf of Mexico, it means the area extending seaward 12 miles from the line of demarcation defined in §80.740 - 80.850 of title 33 of the CFR.

Non-persistent or Group I Oil: A petroleum-based oil that, at the time of shipment, consists of hydrocarbon fractions:

1. At least 50% of which by volume, distill at a temperature of 340 degrees C (645 degrees F);
2. At least 95% of which volume, distill at a temperature of 370 degrees C (700 degrees F).

Ocean: The open ocean, offshore area, and nearshore area as defined in this subpart.

Offshore area: The area up to 38 nautical miles seaward of the outer boundary of the nearshore area.

Oil or Oils: Naturally occurring liquid hydrocarbons at atmospheric temperature and pressure coming from the earth, including condensate and natural gasoline, and any fractionation thereof, including, but not limited to, crude oil, petroleum gasoline, fuel oil, diesel oil, oil sludge, oil refuse, and oil mixed with wastes other than dredged spoil. Oil does not include any substance listed in Table 302.4 of 40 CFR Part 302 adopted August 14, 1989, under Section 101(14) of the federal comprehensive environmental response, compensation, and liability act of 1980, as amended by P. L. 99-499.

Oil Spill Liability Trust Fund: Means the fund established under section 9509 of the Internal Revenue Code of 1986 (26 U.S.C. 9509).

Oily Waste: Product contaminated waste resulting from a spill or spill response operations.

On-Scene Coordinator (OSC): Means the federal official pre-designated by the EPA or the USCG to coordinate and direct response under subpart D.

On-site: Means the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of a response action.

Open Ocean: means the area from 38 nautical miles seaward of the outer boundary of the nearshore area, to the seaward boundary of the exclusive economic zone.

Owner or Operator: Any person, individual, partnership, corporation, association, governmental unit, or public or private organization of any character.

Persistent Oil: A petroleum-based oil that does not meet the distillation criteria for a non-persistent oil. For the purposes of this Appendix, persistent oils are further classified based on specific gravity as follows:

1. Group II specific gravity less than .85
2. Group III specific gravity between .85 and less than .95
3. Group IV specific gravity .95 and including 1.0
4. Group V specific gravity greater than 1.0

Plan Holder: The plan holder is the industry transportation related facility for which a response plan is required by federal regulation to be submitted by a vessel or facility's owner or operator.

Post Emergency Response: The portion of a response performed after the immediate threat of a release has been stabilized or eliminated and cleanup of the sites has begun.

Post Emergency: The phase of response operations conducted after the immediate threat of the release has been stabilized, and cleanup operations have begun.

Primary Response Contractors or Contractors: An individual, company, or cooperative that has contracted directly with the plan holder to provide equipment and/or personnel for the containment or cleanup of spilled oil.

Qualified Individual (QI): That person or entity who has authority to activate a spill cleanup contractors, act as liaison with the "On-Scene Coordinator" and obligate funds required to effectuate response activities.

Recreation Areas: Publicly accessible locations where social/sporting events take place.

Regional Response Team (RRT): The Federal response organization (consisting of representatives from selected Federal and State agencies) which acts as a regional body responsible for overall planning and preparedness for oil and hazardous materials releases and for providing advice to the OSC in the event of a major or substantial spill.

Remove or Removal: As defined by section 311(a)(8) of the CWA, refers to containment and removal of oil or hazardous substances from the water and shorelines or the taking of such other actions as may be necessary to minimize or mitigate damage to the public health or welfare (including, but not limited to, fish, shellfish, wildlife, public and private property, and shorelines and beaches) or to the environment. For the purpose of the NCP, the term also includes monitoring of action to remove discharge.

Response Activities: The containment and removal of oil from the water and shorelines, the temporary storage and disposal of recovered oil, or the taking of other actions as necessary to minimize or mitigate damage to public health or welfare, or the environment.

Response Contractors: Persons/companies contracted to undertake a response action to contain and/or clean up a spill.

Response Guidelines: Guidelines for initial response that are based on the type of product involved in the spill, these guidelines are utilized to determine clean-up methods and equipment.

Response Plan: A practical manual used by industry for responding to a spill. Its features include: (1) identifying the notifications sequence, responsibilities, response techniques, etc. in a easy to use format; (2) using decision trees, flowcharts, and checklists to insure the proper response for spills with varying characteristics; and (3) segregating information needed during the response from data required by regulatory agencies to prevent confusion during a spill incident.

Response Resources: All personnel and major items of equipment available, or potentially available, for assignment to incident tasks on which status is maintained.

Responsible Party: Any person, owner/operator, or facility that has control over an oil or hazardous substance immediately before entry of the oil or hazardous substance into the atmosphere or in or upon the water, surface, or subsurface land of the state.

Response Priorities: Mechanism used to maximize the effective use of manpower and equipment resources based upon their availability during an operational period.

Response Resources: All personnel and major items of equipment available, or potentially available, for assignment to incident tasks on which status is maintained.

Restoration: The actions involved in returning a site to its former condition.

Rivers and Canals: A body of water confined within the inland area that has a project depth of 12 feet or less, including the Intracoastal Waterway and other waterways artificially created for navigation.

Securing the Source: Steps that must be taken to stop discharge of oil at the source of the spill.

Sinking Agents: Means those additives applied to oil discharges to sink floating pollutants below the water surface.

Site Characterization: An evaluation of a cleanup site to determine the appropriate safety and health procedures needed to protect employees from identified hazards.

Site Conditions: Details of the area surrounding the facility, including shoreline descriptions, typical weather conditions, socioeconomic breakdowns, etc.

Site Safety and Health Plan: A site specific plan developed at the time of an incident that addresses:

- Safety and health hazard analysis for each operation.
- Personal protective equipment to be used.
- Training requirements for site workers.
- Medical surveillance requirements.
- Air monitoring requirements.
- Site control measures.
- Decontamination procedures.
- Emergency response procedures.
- Confined space entry procedures.

Site Security and Control: Steps that must be taken to provide safeguards needed to protect personnel and property, as well as the general public, to ensure an efficient clean-up operation.

Skimmers: Mechanical devices used to skim the surface of the water and recover floating oil. Skimmers fall into four basic categories (suction heads, floating weirs, oleophilic surface units, and hydrodynamic devices) which vary in efficiency depending on the type of oil and size of spill.

Snare Boom: Oil will adhere to the material of which this boom is made of and thus collect it.

Sorbents: Materials ranging from natural products to synthetic polymeric foams placed in confined areas to soak up small quantities of oil. Sorbents are very effective in protecting walkways, boat decks, working areas, and previously uncontaminated or cleaned areas.

Spill: An unauthorized discharge of oil or hazardous substance into the waters of the state.

Spill Observer: The first Facility individual who discovers a spill. This individual must function as the first responder and person-in-charge until relieved by an authorized supervisor.

Spill of National Significance (SONS): Means a spill which due to its severity, size, location, actual or potential impact on the public health and welfare or the environment, or the necessary response effort, is so complex that it requires extraordinary coordination of federal, state, local, and responsible party resources to contain and cleanup the discharge.

Spill Management Team: The personnel identified to staff the organizational structure identified in a response plan to manage response plan implementation.

Spill Response: All actions taken in responding to spills of oil and hazardous materials, e.g.: receiving and making notifications; information gathering and technical advisory phone calls; preparation for and travel to and from spill sites; direction of clean-up activities; damage assessments; report writing, enforcement investigations and actions; cost recovery; and program development.

Spill Response Personnel: Federal, state, local agency, and industry personnel responsible for participating in or otherwise involved in spill response. All spill response personnel will be pre-approved on a list maintained in each region.

Staging Areas: Designated areas near the spill site accessible for gathering and deploying equipment and/or personnel.

State Emergency Response Commission (SERC): A group of officials appointed by the Governor to implement the provisions of Title III of the Federal Superfund Amendments and Re-authorization Act of 1986 (SARA). The SERC approves the State Oil and Hazardous Substance Discharge Prevention and Contingency Plan and Local Emergency Response Plans.

Surface Collecting Agents: Means those chemical agents that form a surface film to control the layer thickness of oil.

Surface Washing Agent: Is any product that removes oil from solid surfaces, such as beaches and rocks, through a detergency mechanism and does not involve dispersing or solubilizing the oil into the water column.

Tanker: A self-propelled tank vessel constructed or adapted primarily to carry or hazardous material in bulk in the cargo spaces.

Tidal Current Tables: Tables which contain the predicted times and heights of the high and low waters for each day of the year for designated areas.

Trajectory Analysis: Estimates made concerning spill size, location, and movement through aerial surveillance or computer models.

Transfer: Any movement of oil to, from, or within a vessel by means of pumping, gravitation, or displacement.

Trustee: Means an official of a federal natural resources management agency designated in subpart G of the NCP or a designated state official or Indian tribe or, in the case of discharges covered by the OPA, a foreign government official, who may pursue claims for damages under section 1006 of the OPA.

Underwriter: An insurer, a surety company, a guarantor, or any other person, other than an owner or operator of a vessel or facility, that undertakes to pay all or part of the liability of an owner or operator.

Unified Command: The method by which local, state, and federal agencies and the responsible party will work with the Incident Commander to:

- Determine their roles and responsibilities for a given incident.
- Determine their overall objectives for management of an incident.
- Select a strategy to achieve agreed-upon objectives.
- Deploy resources to achieve agreed-upon objectives.

Unified or Coordinated Command Meeting: Held to obtain agreement on strategic objectives and response priorities; review tactical strategies; engage in joint planning, integrate response operations; maximize use of resources; and minimize resolve conflicts.

Volunteers: An individual who donates their services or time without receiving monetary compensation.

Waste: Oil or contaminated soil, debris, and other substances removed from coastal waters and adjacent waters, shorelines, estuaries, tidal flats, beaches, or marshes in response to an unauthorized discharge. Waste means any solid, liquid, or other material intended to be disposed of or discarded and generated as a result of an unauthorized discharge of oil. Waste does not include substances intended to be recycled if they are in fact recycled within 90 days of their generation or if they are brought to a recycling facility within that time.

Waters of the U.S. - See Navigable Waters in this Glossary.

Wetlands: Those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds (40 CFR 112.2(y)).

Wildlife Rescue: Efforts made in conjunction with Federal and State agencies to retrieve, clean, and rehabilitate birds and wildlife affected by an oil spill.

Worst Case Discharge: The largest foreseeable discharge under adverse weather conditions. For facilities located above the high water line of coastal waters, a worst case discharge includes those weather conditions most likely to cause oil discharged from the facility to enter coastal waters.

ACRONYMS

AC	-	Area Committee	ETA	-	Estimated Time of Arrival
AOR	-	Area of Review	FAA	-	Federal Aviation Administration
AQI	-	Alternate Qualified Individual	FACT	-	First Assessment Crisis Team
BIA	-	Bureau of Indian Affairs	FAX	-	Facsimile Machine
BLM	-	Bureau of Land Management	FCC	-	Federal Communications Commission
BPD	-	Barrels Per Day	FEMA	-	Federal Emergency Management Agency
BOD	-	Biological Oxygen Demand	FOSC	-	Federal On-Scene Coordinator
BOEMRE	-	Bureau of Ocean Energy, Management, Regulation and Enforcement (replaced MMS)	FR	-	Federal Register
BOM	-	Bureau of Mines	FRDA	-	Freshwater Resource Damage Assessment
CAER	-	Community Awareness and Emergency Response	FRF	-	Federal Revolving Fund
CBP	-	Customs and Border Protection	GIS	-	Geographic Information System
CERCLA	-	Comprehensive Environmental Response, Compensation and Liability Act	GSA	-	General Services Administration
CFR	-	Code of Federal Regulations	HAZWOPER	-	Hazardous Waste Operations and Emergency Response
CHEMTREC	-	Chemical Transportation Emergency Center	HHS	-	Department of Health and Human Services
COE	-	U. S. Army Corps of Engineers	HOPD	-	Head Office Products Distribution
CPI	-	Corrugated Plate Interceptor	IBRRC	-	International Bird Rescue Research Center
CRZ	-	Contamination Reduction Zone	IOCC	-	Interstate Oil Compact Commission
CWA	-	Clean Water Act (Federal - Public Law 100-4)	LEPC	-	Local Emergency Planning Committee
CWS	-	Community Water System	LFL	-	Lower Flammable Limit
CZM	-	Coastal Zone Management	LOSC	-	Local On-Scene Coordinator
DECON	-	Decontamination	LRT	-	Local Response Team
DOS	-	Department of State	MBL	-	Mobile
DOT	-	Department of Transportation	MER	-	Marine Emergency Response
DRAT	-	District Response Advisory Team	MMS	-	Minerals Management Service (replaced by BOEMRE)
DRG	-	District Response Group	MMT	-	Marine Management Team
EBS	-	Emergency Broadcast System	MOU	-	Memorandum of Understanding
EHS	-	Extremely Hazardous Substance	MSDS	-	Material Safety Data Sheet
EMA	-	Emergency Management Agency	MSO	-	Marine Safety Office
EMS	-	Emergency Medical Service	MSRC	-	Marine Spill Response Corporation
EOC	-	Emergency Operations Center	NCP	-	National Contingency Plan
EPA	-	U. S. Environmental Protection Agency	NCWS	-	Non-Community Water System
EPCRA	-	The Emergency Planning and Community Right-to-Know Act of 1986 (Title III of SARA)			
EQ	-	Environmental Quality			
ERT	-	Environmental Response Team			
ESA	-	Endangered Species Act			

NEPA	- National Environmental Policy Act	RCRA	- Resource Conservation and Recovery Act
NIOSH	- National Institute for Occupational Safety and Health	RECON	- Reconnaissance
NMFS	- National Marine Fisheries Service	REP	- Radiological Emergency Preparedness
NOAA	- National Oceanic and Atmospheric Administration (Department of Commerce)	RERT	- Radiological Emergency Response Team
NPDES	- National Pollution Discharge Elimination System	RQ	- Reportable Quantity
NPFC	- National Pollution Funds Center	RRT	- Regional Response Team
NPS	- National Park Service	RSPA	- Research and Special Programs Administration (replaced by PHMSA)
NRC	- National Response Center	SARA	- Superfund Amendments and Reauthorization Act
NRDA	- Natural Resource Damage Assessment	SCBA	- Self Contained Breathing Apparatus
NRS	- National Response System	SDWA	- Safe Drinking Water Act
NRT	- National Response Team	SERC	- State Emergency Response Commission
NSF	- National Strike Force	SIC	- State Implementation Plan
NSFCC	- National Strike Force Coordination Center	SMT	- Spill Management Team
NTNCWS	- Non -Transient Non-Community Water System	SONS	- Spill of National Significance
OPA	- Oil Pollution Act	SOP	- Standard Operating Procedure
OPS	- Office of Pipeline Safety (DOT)	SPCC	- Spill Prevention Control and Countermeasures
OSC	- On-Scene Coordinator	SSC	- Scientific Support Coordinator (NOAA)
OSHA	- Occupational Safety and Health Administration (USDL)	STEL	- Short Term Exposure Limits
OSLTF	- Oil Spill Liability Trust Fund	SUPSALV	- United States Navy Supervisor of Salvage
OSPRA	- Oil Spill Prevention and Response Act	SWD	- Salt Water Disposal
OSRO	- Oil Spill Response Organization	TSCA	- Toxic Substances Control Act
PCB	- Polychlorinated Biphenyls	TSDF	- Treatment, Storage or Disposal Facility
PFD	- Personal Flotation Device	UCS	- Unified Command System
PGR	- Pager	USACOE	- U.S. Army Corps of Engineers
PHMSA	- Pipeline and Hazardous Material Safety Administration (replaced RSPA)	USCG	- U.S. Coast Guard
PIAT	- Public Information Assist Team	USDA	- U.S. Department of Agriculture
POLREP	- Pollution Report	USDL	- U.S. Department of Labor
PPE	- Personal Protective Equipment	USDOD	- U.S. Department of Defense
PPM	- Parts Per Million	USDOE	- U.S. Department of Energy
PSD	- Prevention of Significant Deterioration	USDW	- Underground Source of Drinking Water
QI	- Qualified Individual	USFWS	- U. S. Fish and Wildlife Services
RACT	- Reasonably Achievable Control Technology	USGS	- U. S. Geological Survey
RCP	- Regional Contingency Plan	WCD	- Worst Case Discharge

Section 6 - Terminal Facilities

Section 6 - Terminal Facilities

(Please contact Tony Mills for any questions/clarification on this section.)

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Changes

Overview

Both the new/changed and deleted requirements are listed below. Only general descriptions are given to help the user understand the change from the previous version.

Reference	Page #	Correction / Clarification (C) or Revision (R)	Description	Revision Effective Date
	i	R	Changed the Content Owner of Section 6 to Tony Mills	11/2008
6.10.4	6-47	R	Deleted the control valve shutdown in 2-3 seconds of an overfill situation reference.	11/2008
6.10.13	6-52	R	Deleted the gate opening sequence in an Emergency Shutdown reference.	11/2008
6.14.1	6-61	R	Added requirements for sealing and padlock locations.	11/2008
6.14.3	6-62	R	Added requirement for replacing illegible or damaged seals.	11/2008
6.14.3	6-62	R	Added requirement for Terminal personnel to record Terminal security sealing activities in InControl.	11/2008
6.19.6	6-92	R	Deleted Seal Log Records section of hard copy forms. InControl now manages these functions.	11/2008
6.19.7	6-97	R	Deleted the steps for inspection of the interior of marine hoses.	11/2008

6.1 - Overview

Terminal management is responsible for the efficient use and safe operation of terminal facilities. Good housekeeping and terminal maintenance play an important role in terminal upkeep. Good housekeeping is a primary indicator of the quality and effectiveness of management.

Terminal management must have in place a system of routine checks and inspections to ensure safe, clean and efficient operations. Terminal operating personnel should perform all minor repairs and preventive maintenance tasks that fall within the scope of their regular duties and capabilities. Senior management will establish direction for handling maintenance work that requires outside assistance. See the Motiva Technical Manual or your Technical Resource for details on standards for terminal facilities. This section includes the description of equipment used in a distribution facility and the required inspections performed on such equipment. Also included are inspection procedures, frequency and appropriate forms.

6.2 - Terminal Inspections

6.2.1 - General

Terminal facilities must be safe for employees, the public and the environment. Management should emphasize preventive maintenance through scheduled periodic inspections that locate developing problems before failure or product leakage occurs. Documentation requirements and frequency intervals for terminal inspections are given throughout this section. InControl is the current mechanism to identify and track all required inspections.

The following are requirements for terminal inspections.

- Local terminal management has responsibility to oversee all periodic inspections to ensure good operating condition and maintenance of product quality.
- Qualified inspectors from outside the terminal can also perform terminal inspections to validate routine inspections and supplement the regular terminal inspection program.
- An API-certified inspector must perform multiyear external and internal tank inspections.

6.2.2 - Inspection Requirements

Regulatory Agency Requirements

Company policy is to comply with all laws and regulations; our inspection and maintenance standards meet or exceed those set by government agencies. The policies in this manual are not intended to contradict, in whole or in part, any governmental rulings. Regulations will take precedence if any apparent conflict arises. Terminal management must communicate such conflicts to senior management.

Documentation

Effective inspection programs require good records. InControl in conjunction with various inspection forms is the current method to document and record inspections performed.

Retention of Forms

The current Company Retention Schedule is available on the Company intranet on the Document Management home page (Intranet home page/Corporate Resources/Record Management). At a minimum, retention of inspection documentation must be from audit period to audit period.

API requires tank documentation (i.e. API 653 inspector forms, calculations, drawings etc.) to be retained for the life of the tank, if the tank is inspected, repaired or altered.

Housekeeping

Safe terminals are always clean terminals. Management must maintain the property and its facilities in a clean, orderly condition. Good housekeeping aids safe, clean and efficient operation and indicates good management. Non-terminal management personnel visiting terminals will view housekeeping as one of the important yardsticks to assess management of the facility.

All employees must help keep the terminal neat, clean and in good repair.

Alternatives to Company employees should be considered to maintain proper standards. Follow OSHA rules and regulations on housekeeping requirements.

6.2.3 - Daily Visual Overall Terminal Inspection



Daily refers to days when terminals are routinely scheduled to be staffed.

Terminal management is responsible for developing and implementing an inspection program for recognizing and/or evaluating the following conditions:

- overall appearance and housekeeping
- signs of leaks
- unusual equipment noises
- odors
- security
- operational readiness
- target indication for floating suction
- dike and roof drains
- VRU/VCU operating parameters
- safety and
- any other SPCC plan requirements.

Local terminal personnel must complete and document a daily walk through inspection which checks for conditions listed above. Daily inspections ensure safe, efficient operation and give management a better understanding of terminal operations.



Each terminal's SPCC plan requires a daily inspection.

6.2.4 - Annual Self Appraisal

In accordance with Standard 105, HSE audit program, a self-appraisal will be conducted annually/ongoing. It is a site-specific form to ensure local HS&E permits and conditions are being complied with. The Regional/Terminal Manager will coordinate scheduling of the SA during the year.

Local Management may schedule parts of the inspection throughout the year, rather than the entire inspection all at once. However all sections must be completed annually. Refer to Section 8.2.1.2, Facility Self-Assessment for more details.

6.2.5 - Assurance Reviews

Terminal and Head Office management are responsible to develop assurance and compliance systems confirming terminal personnel are using and following established procedures. Contact your Environmental Representative for assistance. For a detailed description of compliance assurance, refer to HS&E MS Standard 100.

Local assurance procedures, such as those listed below, must be established as appropriate:

- random checks by plant supervisors
- plant team reviews
- internal terminal management reviews or audits, and
- informal reviews or checks by region or head office staff.



These reviews do not require documentation.

Head Office will arrange for periodic terminal reviews to assure senior management is in compliance with company policy and governmental regulations. Assurance reviews may be independent or in conjunction with corporate compliance assurance reviews. These reviews may include:

- Management System Assurance (MSA)
- Internal/Independent HS&E Review
- Financial Audit (including Measurement Policy compliance)

6.3 - Aboveground Storage Tanks

Aboveground Storage Tanks are Distribution's largest and most important asset. As such, oversight is provided by a centralized tank inspection program. Terminal Management must be aware of scheduled tank inspections. Consult with your Project Coordinator or other Technical Resource to clarify any questions

6.3.1 - Tank Regulations

The federal government has been slow to develop and implement tank regulations. In response, many states and local municipalities are choosing to promulgate their own tank regulations.

Head Office does not follow most state or local legislative and regulatory activities, so local plants must be alert to developing regulations. In addition, plants must become part of the development process to help ensure establishment of reasonable and effective tank regulations.

All tank repairs and maintenance are to be coordinated with Local Project Coordinator and Environmental Representative.

6.3.2 - External Floating Roofs

Distribution currently uses two types of external floating roofs (EFR): pontoon and double-deck. Both of these use steel construction.

Manufacturers supply various versions of the two basic roof types that emphasize different features, such as full-liquid contact, load-carrying capacity, roof stability or pontoon arrangement. Roof fittings can contribute to evaporative loss; however, these fittings normally have design features to minimize such losses.

To convert an external floating roof to an internal floating roof, a fixed roof can be installed over the floating roof. Such fixed roofs include a cone roof and a lightweight aluminum geodesic dome. Such roofs rest on and are anchored to the tank shell. Any changes to the tank's EFR must be coordinated with Local Project Coordinator and Environmental Representative to properly account for all emissions.

6.3.3 - Internal Floating Roofs

Most internal floating roofs (IFR) fall into one of these categories:

- steel or aluminum pan
- aluminum pontoon or aluminum honeycomb sandwich, or
- old external floating roofs that have been converted to internal floaters.

Like external floating roofs, each of the designs has inherent design features and limitations. A few of these are cost, inherent buoyancy, corrosion resistance, durability and service life.

An alternative to the typical leg supported roof, a cable suspended roof can be installed. This cable suspended IFR is not supported by adjustable leg; it is supported by cables that run through the fixed roof. These cables can be adjusted to change the minimum operating height of the suspended roof. The advantages to a cable suspended IFR are:

- increases the tank capacity
- reduces the emissions lost through the leg openings
- does not require entering the tank to adjust roof setting
- no risk of damage to floor caused by legs

Any changes to the tank's IFR must be coordinated with Local Project Coordinator and Environmental Representative to properly account for all emissions.

6.3.4 - Procedures for All Floating Roof Systems

Consult with your Health and Safety Representative for proper equipment and procedures when descending onto the floating roof (internal or external) of a tank.

Typically, descent onto the roof of an external floating roof tank constitutes entering a confined space.

Maintain product levels that prevent the roof from resting directly on the legs or supports, except when the tank is taken out of service. Head Office management must approve any exceptions to this policy.



The reasons for this policy are safety, air emissions during refilling, hazardous vapors during emptying, product loss, erosion-corrosion damage to the tank floor, and stress cracking of the floating roof.

Limit receipt line fill rates to 3 feet/second when bringing a tank into service, until the roof is floating or the product level is at least 1 foot above the fill line inlet. This fill rate must also be maintained, when floating a roof, from 3 inches below the critical zone to 3 inches above the critical zone. This limit minimizes static electricity generation and prevents roof damage (e.g. seals getting hung up, interference) and verifies appurtenances operating correctly. Consult with your Local Project Coordinator for further assistance.



Use the *Flow Rate Conversion Table for Various Pipe Sizes* (in the Appendix of Section 3) to convert rates, indicated as feet per second (fps), to gallons per minute (gpm).

6.3.5 - Procedures to Manage Rain Water from Aboveground Tanks

All terminals with tanks that have roof drains must have a written plan for managing tank roof drains. The plan must include, but should not be limited to, the following requirements.

- The plan must ensure that the dike valves are closed before opening roof drain valves and to keep dike valves closed during the entire time roof drain valves are open.



Roof drain systems are present only on external floating roof tanks, or tanks converted to internal pans.

- The plan must assign specific responsibility and accountability to personnel for knowing and documenting the status of tank roof drain valves.
- The plan must include provisions for always keeping tank roof drain valves closed and locked unless attended drain operations are underway.
- The plan must include procedures for contacting Head Office management if a faulty roof drain is leaking or cannot be closed, to determine whether to remove the tank from service. Special documented interim operating procedures will be required until the drain can be repaired (e.g., placing portable air-operated pump on the floating roof and monitoring during rain).
- The plan must include requirements for visually inspecting roof drain valves status (open or closed) daily and document on daily walk through checklist.
- The plan must include requirements for visually inspecting for status and operability all roof and dike drain valves at least quarterly, and recording valve status in a report, log book or other record that can be reviewed for compliance.
- The plan must include requirements for conducting and documenting training for personnel with responsibility for roof draining.

6.3.6 - Tank Inspection Requirements

General

Distribution has chosen to follow the requirements of API Standard 653. API 653 is a minimum standard that covers tank inspection, repair, alteration and reconstruction.



Project Coordinator may use the *Tank Inspection and Maintenance Manual* for reference.

Types of API 653 Tank Inspections

There are three inspections required by API 653:

Monthly in-service inspection by a company employee at the location (See details below)

Annual external inspection by a Motiva certified API 653 tank inspector or every five years as per API 653. See your Project Coordinator for appropriate frequency.

Internal inspection by a certified API 653 tank inspector

The frequency of these inspections is based on the corrosion rate of the tank floor – both topside and underside. The actual inspection interval must be set to ensure the bottom plate minimum thicknesses at the next inspection are not less than the values listed in API 653, Table 4-1. The internal inspection interval shall never exceed 20 years.

Guidelines For Monthly Inspections

Guidelines for monthly tank inspection according to API 653 are listed below.

- The purpose of the monthly inspection is to identify any significant or major changes in the tank since the last inspection. Monthly inspections partially fulfill API 653 requirements.



DOT jurisdictional terminals must complete a yearly tank inspection. Any one of the monthly inspections will meet the requirements of this regulation therefore a separate annual tank inspection is not required. [CFR 49, Part 195.432, Paragraphs (a) and (b)]. Refer to Section 12 for definitions and information about DOT jurisdictional terminals. Currently, There are no DOT tanks owned and operated by Motiva Distribution as of current.

- Monthly inspections must be assigned to terminal operators, gaugers or other personnel who are knowledgeable about tanks, storage facility operations and products stored.
- Inspections must be documented, noting any failures or significant damage, on the "Storage Tank Monthly In Service Inspection Report" (taken from *Tank Inspection and Maintenance Manual*) in Appendix 6.19.1 or an equivalent inspection form. The completed reports must be retained at the Terminal.



Listing multiple tanks on one form for a single month is acceptable. A form with multiple months for 1 tank is not recommended because form retention is a moving window.

- Send information about any potentially serious condition (i.e., inspection report, detailed description, photos, sketches, etc.) to your technical resource. Technical support can provide technical help and will coordinate ultrasonic, external and internal inspections.

Routine in-service inspection includes a visual check of the tank's exterior surface and surrounding area for any of these deficiencies:

- Leaks – Look for product on the top surface of the foundation or apron; product sheen on the ground or ground water; or seepage from rivets, seams, valves, flanges, welds or open areas of plate.
- Distortions – Look for signs of inward or outward bowing of tank shell and any visible distortions in the bottom extension or roof angle.
- Settlement – Check for visible settlement into the earth, sand or asphalt apron; buildup of apron material above tank bottom against the shell; and liquid drainage toward the tank.
- Corrosion – Check shell, bottom extension, nozzles, manway necks and attached piping. Do not allow dirt, rocks or gravel to accumulate against the chime (shell-to-bottom joint). Normally the chime is protected by paint to prevent atmospheric, not underground exposure. Soil against the chime allows moisture migration under the uncoated tank floor, promoting corrosion.
- Foundation – Look for cavities under the tank and broken, cracked or spalling concrete.
- Paint – Check for cracked, blistered or rusted areas.
- Insulation (as appropriate) – Check insulation for damage. Seal any penetrations through insulation to keep out water and moisture.
- Appurtenances – Look for missing flange bolts and corroded bolts or welds. Note any leaks from tank appurtenances.
- Dike - To prevent corrosion on the underside of the floor and on the edge of the floor extension (chime), maintain the slope of the dike yard so that rainwater flows away from the tank. Drain rainwater so it does not stand against the tank.
- Surrounding Area – Check for damage or erosion in the dike wall, look for excess vegetation growth.

External In-Service Inspection

External in-service inspections will be done by a Motiva API 653-certified tank inspector annually. A terminal may also perform a five-year external inspection as per API 653. Both inspections are not required.

Terminal management will coordinate with technical resources to schedule and conduct these inspections.

Internal Inspections

Internal, out-of-service inspections (with 95 percent electronic floor scan) will be conducted by an API 653 certified tank inspector according to this schedule:

- Whenever a tank has been out of service more than 1 year and will be returned to service. Contact your technical resource, who will evaluate the tank, review the records and determine the need for future inspections/repairs.
- Before remaining bottom thickness has corroded to the level specified in API 653 or at least every 20 years, whichever is less. Contact your technical resource to determine which states require more frequent internal inspections than specified in API 653.



Annually, local Terminal management is to discuss and strategize tank inspections to occur in the next 12 to 18 months with their project coordinator (during this session, dock inspections and API 570 Inspections for onsite and offsite underground lines should be discussed – Reference Sections 6.8.4 and 6.11.3). Local Terminal Managers will also coordinate all tank out-of-service activities with Supply. Consideration must be taken for peak demand periods.

When tanks are scheduled out-of-service, consider allowing time for unforeseen repairs, as well as time required to clean and inspect the tank. Check the last external inspection report and tank files for suggested welding, internal lining condition and other repairs. Check with Local Project coordinator to assure all necessary work is done when out of service. Local Project Coordinator can use Tank Closure Checklist for guidance. Example of this checklist is in Appendix 6.19.2.

More and more states are passing legislation that affect storage tanks, especially regulations to comply with the Clean Air Act and secondary containment laws. Regulations may be pending that will require tank modifications while the tank is gas free. While planning an internal out-of-service inspection, consider consulting with local environmental representatives to determine whether tank modification or additions will be required in the near future. If so, consider preparing for such additions (e.g., by installing bolts, bolt holes or weld-on brackets necessary for secondary seals, wiper seals).

Refer to Section 9 for appropriate inspection intervals for internal inspections of aboveground tanks for product quality (i.e. Jet Fuel).

6.3.7 - Floating Roof Seal Systems

General

All types of floating roofs have an annular rim space between the tank shell and the roof's outer periphery to permit the roof to travel within the tank. The annular rim space must have an effective seal system to minimize evaporative losses and to meet air quality regulations. An effective seal system closes the rim space and helps to center the floating roof, but permits normal roof movement.

A seal system can consist of one or two separate seals called the primary and secondary seals. Company terminals have installed a variety of seal systems in the past; however, current construction standards recommend double-wiper seals or mechanical shoe primary and if required wiper secondary seal to meet environmental regulations (See Appendix 6.19.4).

Seal System Requirements

Federal regulations require a pan with one of two seal types for volatile (RVP \geq 1.5psia) products:

Liquid-mounted seals (the roof seal rides in the liquid thus allowing no vapor space)

Vapor-mounted seals (the roof seal forms a vapor barrier between the roof and tank shell)

Federal and local regulations may require inspection and repair of holes or defects in the seal system. Integrity of the vapor space enclosure is important to control evaporative loss.



Consult with Local Technical Resources and Health and Safety Representative if the seal system needs to be repaired or replaced.

6.3.8 - Primary Seals

General

This section describes the following three types of primary seals:

- mechanical (metallic) shoe seals
- resilient (nonmetallic) filled seals, and
- flexible- wiper seals.

Mechanical (Metallic) Shoe Seals

The following provides information on mechanical shoe seals.

- This seal's identifying characteristic is a light-gauge metallic band (shoes) that serves as the sliding contact with the tank shell. A mechanical device attached to the floating roof supports the metallic band and holds it against the tank shell (See Appendix 6.19.21).
- A coated fabric (the primary seal fabric) seals the rim space. Bolting or clamping the fabric from the shoes to the floating roof creates this seal.
- The specific type of primary seal fabric may vary according to the manufacturer and the kind of hydrocarbon service.
- Mechanical shoe seals usually accommodate a local variation of ± 5 inches in a normal 8-inch rim space.
- Mechanical shoe seals have the longest service life (20+ years) in normal use (i.e., when the roof is continually floating). In general, the primary seal fabric may begin to show signs of aging before the metallic parts show wear. Severe corrosion may occur when using mechanical shoe seals in a corrosive product or under unusual operating conditions, such as the underside of a roof that has frequent exposure to air. Using corrosion-resistant metals or special coatings is advantageous in such cases.
- EFRs also include a weather shield. Other types of primary and secondary seals are in use or under development, but are not yet widely used.

Resilient (Nonmetallic) Filled Seals

This seal's identifying characteristic is a coated fabric envelope that contains resilient foam. The material in the envelope expands to provide a sliding contact with the tank shell (See Appendix 6.19.22).

A resilient filled seal may be either liquid mounted or vapor mounted. A liquid-mounted seal sits on the floating roof so that it touches the liquid surface. A vapor-mounted seal allows a vapor space between the liquid and the seal.

Service considerations for resilient filled seals are listed below.

- A resilient filled seal's main advantage is its flexibility to accommodate a normal variation of ± 4 inches in rim space.
- Vapor-mounted seals do not control emissions as well as a liquid mounted seal, but do not deteriorate from contact with the product as quickly as a liquid-mounted seal.
- A vapor mounted seal requires a secondary seal to control emissions.

- Liquid-mounted seals significantly reduce evaporative loss since they have no rim vapor space however they deteriorate more quickly because they are in contact with product
- Liquid-mounted seals may also absorb product into the foam making tank cleaning more difficult and expensive.
- The normal life of resilient seals is typically 7-10 years.
- Projections from the shell, such as rivet heads or burrs, may cause wear and reduce the seal's service life.
- If a tank has this type of seal, consider upgrading to a mechanical (metallic) shoe seal during the next API 653 internal inspection. This will provide a longer service life (20+ years).

Flexible-Wiper Seals

This seal's identifying characteristic is an elastomeric blade that serves as a sliding contact with the tank shell (similar to the windshield wiper on a vehicle).

The flexible-wiper seal bridges the annulus between the floating roof and the tank shell and uses its own stiffness or mechanical means to push the seal against the tank shell (See Appendix 6.19.23).

Service considerations for flexible-wiper seals are listed below.

- This seal's advantage is its flexibility. The wiper is usually more flexible than a mechanical shoe seal; therefore, it may conform better to the tank shell.
- The wiper seal is mounted above the liquid to avoid potential deterioration from contact with liquid. Like resilient filled seals, the nonmetallic parts of wipers do not corrode.
- Most flexible-wiper seals accommodate a normal variation of ± 4 inches in the rim space. Large-diameter tanks or those with a rim space greater than 8 inches may require special details.
- The rim vapor space of flexible-wiper seals do not control emissions as well as liquid mounted seal. Gaps between the seal and tank shell lead directly to the rim vapor space and permit more evaporative loss.
- A vapor mounted seal requires a secondary seal to control emissions.

6.3.9 - Secondary Seals

Secondary seals usually consist of fabric or elastomeric materials, sometimes with metallic or nonmetallic stiffeners to reinforce the fabric, or external attachments to guide the seal. Secondary seals generally fall into one of three categories: shoe-mounted, or rim-mounted.

Shoe-mounted secondary seals effectively reduce losses from gaps between the shoe and tank shell, but do not control losses from defects or connections in the primary seal fabric.

Rim-mounted secondary seals more effectively reduce losses because they cover the entire rim space. Rim-mounted seals make up the vast majority of secondary seals.

Mini secondary shoe seals are an alternative.

Service considerations for secondary seals are as follows.

- Some secondary seals can reverse as the floating roof reverses its direction of travel.
- A secondary seal must maintain contact with the tank shell to be effective; therefore, the roof cannot travel as close to the tank shell's top edge. This limitation slightly reduces the tank's working capacity.
- Properly fitted shoe-mounted secondary seals provide a good service life.
- Mini secondary seals have a significantly longer service life than the shoe-mounted and the rim mounted secondary seals.

6.3.10 - Floating Roof Seal Inspections

There are four general types of seal inspections:

- Tanks with external floating roofs require an annual close visual inspection and a seal gap measurement every 5 years for the primary seal and annually for a secondary seal (if applicable). A monthly visual inspection from the top of the tank is also required.
- Tanks with internal floating roofs require a visual inspection from the manway annually.
- Tanks at Maximum Achievable Control Technology (MACT) facilities require a 10-year seal inspection on internal floating roofs in addition to the annual manway inspection.
- Any tank taken out of service for cleaning requires a close visual seal inspection.

The type of floating roof and EPA's "k" classification must be determined in order to determine any additional inspection requirements. Refer to Local Environmental Representative for assistance.



Some local and state jurisdictions have additional seal inspection requirements. Check with the environmental representative for additional requirements.

Local or contract personnel who are familiar with various seal designs and operation will perform seal inspections. Refer to Appendix 6.19.4 for procedures and suggested forms. Local Management can choose to use an equivalent form. Information from the inspections ensures compliance with regulations and allows scheduling of seal maintenance for the coming years. Early detection and correction of seal problems may prevent further damage, including sinking of a floating roof.

6.3.11 - Weather Shields

Most external floating roof require weather shields. The following provides information on weather shields.

- Weather shields usually have an overlapping shingle-type construction and numerous radial joints to allow for roof movement and tank shell irregularities.
- Weather shields have metallic, elastomeric or composite construction.
- A mechanical or pliable hinge connection normally attaches the weather shield to the floating roof.
- Weather shields generally extend primary seal life by protecting the fabric from weather and debris.

6.3.12 - Floating Suction and Suction Trough

A “floating suction” is a jointed pipe connected to the shipping nozzle of the tank that is able to rise and fall with product level inside the tank. This allows product to always be drawn from within a couple of feet of the top level of product in the tank.

Floating suctions offer many benefits, if operating properly, such as:

- More quickly being able to draw product from a tank after a receipt in case of hazy product, particulate contamination, etc.
- Reduces risk of off spec product being shipped if the tank is shipping and receiving product simultaneously
- Enhances the ability to mix tank for RVP blend down, particularly if the tank does not have mixing nozzles, etc.
- Minimizes the risk of water or sludge inadvertently being shipped to the truck rack

However, there are many concerns with floating suction and many opportunities for them to fail. Failures typically require the tank to be taken out of service to make repairs. Some of the concerns with floating suction are as follows:

- Floating suction sinking
- Floating suction damaging the floating roof
- Floating suction coming off the rollers
- Improper style elbow ("Y" preferred vs. 90 degree single elbow)
- Swivel/swing joint failure
- Loss of suction head because of additional pipe length potentially reducing the working capacity of the tank
- Need for proper product gravity calculations for flotation of floating suction (buoyancy).
- Need to recalculate buoyancy and reset pontoons with product changes
- Cost and time needed for installation
- Long lead time on ordering swivels
- Possible alterations to tank shell and possible resulting hydrotest requirements
- Overall increased risks of failures

All aviation tanks that ship product to the rack are required to have floating suction. Refer to Section 9 for more details.



Floating suction piping equipped with external target indicators must be monitored daily. Failure of a floating suction line may mean the suction line is resting on the tank floor, and all withdrawals are from the floor area. The outgoing stream often picks up sludge, sediment or other contaminants when floating suction fails (sink).

A "suction trough" is a fixed piece of pipe with an opening towards the top of the tank. This orientation prevents water/sludge being drawn from the bottom of the tank.

A suction trough offers many benefits, such as:

- More cost effective installation
- Easy to fabricate and install without special materials, tools or skills
- Minimal time required to fabricate and install
- No calculation for buoyancy with product change
- No moving parts
- No maintenance
- No significant loss in suction head (NPSH) or reduction in tank working capacity
- No target to fail
- Does not interfere w/ IFR operation

Some of the concerns associated with suction troughs are:

- No added benefit for reducing settlement time
- Little experience with use, may have unforeseen drawbacks

Due to the many complications of floating suction, it has become the preference to install a suction trough on any tanks that do not already have a floating suction.



Beginning in late 2006, any tank without a floating suction must have a suction trough or floating suction installed at its next OOS inspection.

In addition, any tanks that already have a floating suction should be evaluated at the time of OOS inspection to verify whether a suction trough would make more sense for the business.

Considerations include quality issues such as the following:

- Free water history
- Sediment history
- Entrained water history
- RVP blend down operations
- Shipping and receiving product in the same tank simultaneously

These considerations should be reviewed when evaluating the need for floating suction versus suction troughs. The one exception is for Jet-A and aviation product tanks, where floating suction will continue to be the requirement, see Section 9, Aviation Products. Refer to your technical representative for appropriate design of the suction trough.

In addition, to the new suction trough or floating suction installations at the tank's next OOS inspection, the following items must be verified and/or corrected at the next OOS inspection:

- It must be verified that water sumps are located at the places of lowest elevation on the tank bottom. As a tank settles many times the shape of the floor bottom may change and the low points may move. When this happens, the water sump is no longer effective because it is not located where the water naturally collects.
- It must be verified that there is an ability to gauge the water level accurately. Many times gauge hatches are not located over sumps and datum plates are located higher than the lowest point in the tank and thus water cannot be detected until there is already a significant accumulation of water in the bottom. Water level should be gauged through a hatch that is located directly over 1 or more of the sumps and where a datum plate does not prevent the gauging mechanism from reaching a point level with the top of the sump.

In addition to these physical changes to the tank to protect against water, there are many operational procedures that are necessary to make sure that water does not get into trucks. Some of the procedures are as follows:

- Assuring minimal amount of water in tank bottoms at all times. This minimizes the chances of inadvertently shipping water, reduces product quality issues caused by biological growth, and minimizes tank bottom damage caused by varied forms of corrosion.
- Draining water and verifying before allowing product levels to drop below pan height
- Proper oversight at truck rack during all truck loading when tank is below low leg level, or when receiving into and shipping out of a tank at the same time when product level is low

Please Refer to Section 3.2.6 and 3.7.2 for more specific information on these procedures.

6.3.13 - Diffusers

Diffusers are appurtenances installed in the tank to reduce the velocity of product during receipt therefore minimizing static electricity and preventing tank sediment from being put into suspension. They are designed such that at maximum receipt rate the velocity of the product out of the diffusers will be 3 feet/sec or less.

All tanks that receive product by pipeline, marine or railcars are required to have diffusers.

6.3.14 - Vents and Flame Arrestors

The functions of vents are to eliminate excessive pressure or vacuum in a tank and allow tanks to equalize internal pressure with atmospheric pressure during filling or withdrawing product

Pressure vacuum vents have the following additional functions:

- To reduce the free discharge of vapor that results from wind and fluctuations in temperature, and
- to restrict tank breathing that results from filling the tank.
- to protect stored product quality by retaining the light ends that vaporize most rapidly, thereby avoiding serious drops in quality.
- to retard gum formation.

All fixed roof tanks require a form of venting. Venting gasoline or other volatile products with an RVP above 1.5 psi to atmosphere is not acceptable. Typically, tanks with internal pans will have eyebrow vents to allow venting of air above the pan. Cone roof tanks without pans should have open elbow vents or open elbows unless local regulations require pressure/vacuum vents. Vapor lines and vapor holding tanks are required to have pressure/vacuum vents. Some additive tanks (e.g. Conductivity) will also have pressure/vacuum vents installed to protect the product quality. All vents must be installed with mesh to prevent animal intrusion.

Typically, smaller tanks (e.g. Less than 40,000 gallons) and all horizontal tanks should have emergency vents. To meet API and NFPA requirements, these small tanks do not have the weak shell-to-roof seam that will fail in the event of an internal tank explosion or fire. See you technical resource for more info.

Flame arrestors are devices that prevent flame propagation into the tank through the vent. When used they are mounted between the tank and the vent. See Section 6.10.9 for details on flame arrestors at the rack.



Use flame arrestors on storage tank vents only when a regulatory authority with legal jurisdiction requires this equipment. Company facilities shall not use flame arrestors in the absence of such specific requirements.

Consult with region technical support for assistance with all matters concerning vents and flame arrestors (including sizing).

Inspection of Vents and Flame Arrestor Seals

Visually inspect P/V vents on above-ground tank at least quarterly and other required vents (i.e. eyebrow, elbow, emergency) and flame arrestors at least annually. Cold weather may make more frequent inspections necessary. Moisture from high humidity, rain, sleet or fog can freeze on vent screens at temperatures up to 40 °F, due to cooling from air flow.



Review the *Health & Safety Manual* for proper safety procedures associated with walking on tank roofs for the purpose of inspecting pressure vacuum vents.

Vents and flame arrestors must meet the following operational criteria:

- Interior of vents thoroughly clean on pressure and vacuum sides
- Properly seated pallets (if required to have installed)
- Protective screening clean
- Vent hood clean
- Honeycomb bank from flame arrestors clean and dry
- Drain valves operating freely
- Nuts and screws securely fastened

Each terminal is to have a form with all tanks with vents and flame arrestors listed where personnel performing inspection can initial and date form after checking the items listed above.



Tanks with eyebrow vents do not require P/V vent inspections. Pallets should be removed from such P/V vents unless locally required. The eyebrow vents that require inspection can be inspected from ground level.

Repair any defective items at once. Refer to the manufacturer's maintenance and operating instructions. A defective vent valve may cause serious trouble. A vent valve stuck in the closed position may cause tank rupture due to excessive pressure when filling or tank collapse due to vacuum when pumping out of the tank. A vent valve stuck in the open position will release hydrocarbon vapors, greatly increasing risk of vapor ignition.

6.3.15 - Legs on Floating Roofs

Most roof legs are adjustable and can be secured in one of the following two positions.

The normal operating setting allows the floating roof to go down to the lowest level. This level is often called "low leg" position or "low roof" position. The purpose of low roof position is to maximize the storage tank's working capacity. In this position, clearance under the roof usually ranges from 3-4 feet. Roof legs should always be set in low roof position during normal operations.



The low legs setting is determined by the interference with tank appurtenances such as the floating suction, diffusers, temperature probes etc.

The other position is called "high leg" position or "high roof" position. This setting is used during an out-of-service inspection/maintenance procedure. It allows a worker to go under the roof for maintenance without bending at the waist or crawling on the floor. Normally, the high roof position allows about 6 feet of clearance under the roof.



Check with your Environmental Representative prior to creating any vapor space below the pan (i.e. making any leg setting height change).

Terminals must obtain Head Office management approval before setting a roof on its legs. Contact HS&E Representative for current requirements.

6.3.16 - Mixing Nozzles

Mixing nozzles are appurtenances installed inside the tank. Their primary function is to assist in mixing products that stratify. Mixing nozzles are typically used on gasoline tanks during RVP blend down or tanks into which product is blended.

Mixing nozzles can be installed on the receipt line causing mixing during receipt.

Nozzles can also be installed so that the tank pump can be used to recirculate through the mixing nozzles causing turbulence and product mixing. A valve must be installed to allow throttling of the flow through the nozzles.

The horizontal angle of the mixing nozzle needs to be 30-45 degrees from the tank shell for swirling effect. The horizontal direction should be pointed away from other tank appurtenances (e.g. thermowells, ladders, suction line, gauges etc).

The vertical angle of the mixing nozzle is determined by the height of the product when nozzle is used, the height and diameter of the tank and the flowrate and pressure through nozzle. Determining the minimum product level when nozzle is used is critical to prevent roof damage. Consult with technical support for design.

Mixing nozzle details (i.e. nozzle orientation; vertical and horizontal angles) are to be documented in tank files. Mixing nozzles must be identified on the tank with its minimum operating height. Mixing nozzles are required to be locked and tagged out if not in use. Run time of mixing nozzles are site specific and can be determined based on experience and testing. Run time is dependent on pump pressure, flowrate, product volume, product type, mixing nozzle orientation and tank size. Typically, the mixing nozzle, if properly installed, should thoroughly mix a tank in 6 hours or less.

6.3.17 - Tank High Level Alarms

General

All storage tanks receiving by pipeline or marine will have high-level alarms independent of any tank gauging device to warn of an imminent tank overfill in time to take corrective action to prevent the overfill. The only exceptions are tanks containing nonhydrocarbon, nonhazardous liquids (e.g., clean water).

It is encouraged, but does not require, installation of high-level alarms on tanks with 1,000 gallons or less capacity and tanks in process usage.

Alarms are not indicating devices or operating aids, and plant personnel should not use them for such purposes.

Tanks that can be filled only by tank truck or tank car do not require high-level alarms if the receipt is attended and controls are in place to ensure the receipt will not overflow the tank. Examples include additive and own-consumption tanks.

Requirements for Alarms

The following are requirements for alarms.

- High level alarm systems will have both "high" and "high-high" settings. Each setting will have its own distinctly recognizable annunciator. (Single high level alarm systems are acceptable on tanks with capacities of 20,000 gallons or less.)
- Alarms must remain functional, if the floating roof or internal pan sinks. Only alarms with displacers (i.e. PVC or porcelain), not weights (i.e. lead), will remain functional if a pan sinks.



If a floating roof or internal pan sinks during a product receipt, the high level alarm will not ring at the set level (because of the changed activation point on the displacer due to buoyancy and the thickness of the pan). This is considered an acceptable risk. Alarms do not need to be set such that they ring at the calculated level in the event a floater/pan sinks. However, in such an event, the high level alarm (not the high-high level alarm also) must ring before the overfill level. In this case the high level alarm will operate later or higher than normal, but at least it will operate prior to an overfill. The high-high alarm would be above the overfill and consequently not ring. Consult with your Technical resource for assistance.

- Annunciators will be located at the tank or another central location so that the alarm will be audible by plant personnel.



Some terminals may have multiple alarms.

- Some locations will also have remote annunciators if the Terminal Manager determines they are necessary to make alarms audible to operators on duty (e.g. At pipeline manifold or on docks).
- Any terminal not manned full-time during receipts must have remote alarms at a manned location to ensure personnel will hear the alarm and take action to prevent an overflow.
- Locations must never intentionally disable or disconnect high-level alarms. The system will remain in active operating status at all times. Exceptions require approval from Head Office management. Routine maintenance does not require approval if it occurs when the terminal is not receiving product and is of short duration.
- High level alarm equipment will not have any bypass switch to turn off the system. The circuit breaker at the main electrical panel is required and allowed, but only to deactivate the system for routine maintenance. Management will reinforce this requirement through training and normal supervisory oversight.
- High level alarm systems must include devices providing an audible alarm if power failure occurs (i.e. must be wired fail-safe). Region tank coordinator will recommend equipment to meet this requirement.

Setting High Alarm Levels

- The overflow level is defined as the level of the tank where product overflow first begins to occur. This level can be found on tank strapping charts.
- Set high-high level alarms to activate at the level where the volume of the tank between the overflow level and the high-high alarm level equals the volume of product entering the tank at maximum fill rate, for a time equivalent to the maximum time it would take for the receipt to shutdown after hearing an alarm PLUS 50 percent (consider this 50 percent safety factor a minimum; the Regional Manager has the authority to decrease it if warranted.). Typically, this is the time it takes for the terminal operator and the pipeline control center to communicate with each other and then for pipeline to shut down their pumps and valves (e.g. around 4-10 minutes).
- Set high alarm levels below high-high levels the same distance as the high-high alarms are set below the overflow level.

- Designate the safe fill level as the level where the volume of the tank between the high alarm and the safe fill level equals the volume calculated above, but without the 50% safety factor (unless the Region Manager decides a safety factor is necessary for the safe fill level setting). Use the safe fill level to communicate the nominal tank capacity to Products Supply Department for determining receipt volumes.

Refer to Appendix 6.19.10 for Level Setting Calculations Sheets.

- Annually review alarm level calculations to be sure settings are at proper levels according to the Setting High Alarms Levels in this section (i.e. ensure there are no changes to flowrates, reaction times, tank strappings, product changes etc.). If there are changes in levels, high level alarms must be adjusted. Document that the review was completed; it requires two signatures one of which needs to be the Terminal/Complex Manager.

Establishing Low Operating Level

Do not set the floating roof down on the roof legs during normal tank operations. Ensure 3-6 inches of clearance between the bottom of the roof legs and the tank floor.

Distribution policy prohibits withdrawing product to create a void space between the roof and product level.

Repeatedly withdrawing product from the tank to the point where the floating roof rests on the roof legs results in accelerated tank deterioration in the following two areas.

The weight of the roof causes the legs to grind into the tank floor, resulting in accelerated corrosion-erosion of the striker plate and/or the floor under the leg. In some instances, a roof leg has actually worn through a 1/2-inch-thick striker plate and then through the 1/4-inch tank floor, resulting in perforation and product release.

The second area of deterioration is the deck of the floating roof. If the floating roof is set on roof legs, the deck plate between the legs is no longer buoyed up by the liquid. Thus, the area of deck plate between the roof legs sags down. Repeated up-and-down flexing of the roof deck will cause fatigue cracks in the deck plate - or more likely - cracked welds. Infrequently, deck perforations have occurred and hydrocarbons have flowed up on the floating roof deck.

Establishing Minimum Fill Level

Establish the "minimum fill level" of the floating roof tank 3-6 inches above the low-roof position. Minimum fill level should be established from the tank's most recent strapping chart. The minimum fill level should be set so that the roof never goes below the critical zone during normal operations.

For tanks without floating roofs, set the "minimum fill level" 6-12 inches above the point where the emptying pump begins to cavitate at the operating flow rate or any higher point Terminal management may designate to avoid pumping out tank bottoms.

Working Capacity

Consider the true working capacity ("working space") as the volume between the "minimum fill level" (determined as described in the previous three items) and the operational fill level.

Note the alarm settings and fill levels on the terminal's tank gauge tables and tank files, and stencil them on the tank in a convenient position. (See Appendix 6.19.15 for tank marking requirements.)

Terminal management will verify settings calculated from the above instructions. Review settings once a year to ensure parameters have not changed (e.g., maximum fill rate, internal tank geometry, maximum fill height, etc.).

Alarm Testing and Alarm Failures

Perform an operations check test within 24 hours before every receipt to ensure operability of the high-level alarm system. Test must include checking operability of high level mechanism on tank, audible tank farm annunciators and remote annunciators (e.g. Pipeline control centers). Document the test was performed. Examples of acceptable documentations are notes and initials in a gauge book or on a product receipt form and automatic annunciator panel print out.

Perform weekly system checks if frequent receipts or other events (i.e. weekend, holiday, scheduling problems) make an alarm system operational check 24-hour before every receipt impractical. This practice required Area manager approval.

Also, perform high level alarm test at least quarterly on tanks equipped with overflow protection systems. Test more often if necessary to comply with local or state ordinances or with Area or pipeline operating procedures. Test must include checking operability of annunciator panel in addition to those components tested before every receipt. Test each component and record the name of the person who performed the test.

See Appendix 6.19.11 for typical tank alarm testing procedures. However, note that the test is complete when the alarm system functions as outlined in the manufacturer's operating instructions. Consult with the original equipment manufacturer or the Technical Department for detailed instructions on conducting the alarm test.

Proceed with the receipt if the system checks properly. Take the following actions if an alarm malfunction is indicated.

- Repair as soon as possible if any part of the alarm system is inoperative.
- Proceed with receipt into an alternate tank if repairs cannot be made before receipt and an alternate tank with a functioning alarm system is available.
- Notify terminal management and all personnel involved with the transfer about the system malfunction if an alternate tank is not available and repairs cannot be made prior to the receipt
- Post a notice of the deficiency at the annunciator panel and have sufficient personnel in attendance during the receipt to allow an operator who can instantaneously initiate any required shutdown to constantly monitor the liquid level using the side gauge. Notify the terminal Manager when putting this contingency procedure into effect.



CAUTION! Verify the operability and accuracy of the sight gauge before the receipt begins. Do not use the tank for this contingency procedure if verification cannot be made. Safety practices do not permit physical gauging of a tank during product receipt.

Alarm System Inspection

Perform the following maintenance inspection annually, in addition to an operational test.

- Open the switch mechanism annually and inspect for moisture, corrosion, cleanliness of contact points, etc. The switch mechanism is located outside the tank vapor space, but accessing it may constitute entry into a confined space (e.g., on external floating roof tanks). Follow proper safe work procedures.

- Include a visual inspection of the internal alarm mechanism (i.e., displacers hanging free, cables/chains not kinked, etc.) where possible without actually entering the tank.
- Thoroughly inspect the internal alarm mechanism (i.e., displacer, cable system, spring system, etc.) and the alarm setting levels when taking a tank out of service for internal work.
- Document inspections and tests in the gauge book (a generic bound record or log) or as otherwise directed and retain in terminal files or on the high-level alarm inspection report form in Appendix 6.19.13.
- See Appendix 6.19.12 for a manufacturer's recommended inspections procedure of a typical high level alarm used.
- Perform maintenance as required.

6.3.18 - Tank Cleaning And Repairs

Authority and Schedules

Prior to taking a tank out of service:

- make appropriate contacts with Product Scheduling/Supply, Region Manager and others as necessary
- discuss with Project Coordinator to predict all repairs and upgrades and review existing tank files. Local Project Coordinator can use Tank Closure Checklist to assist this discussion (Appendix 6.19.2).
- obtain permits as required by local and state regulations, and
- give the Supplies Department at least 30 days advance written notice of any proposal to clean or repair storage tanks at marine or pipeline supplied plants (except in emergencies). Include the estimated date for work completion and return to service.
- confirm the exact return-to-service date as soon as possible.

Safety Precautions

Entering and working in confined spaces, especially tank cleaning, presents hazards for terminal operating staff and contract employees.

Consider needs to be given to static generation when appurtenances will be disconnected and tank cleaning inspection process. Consideration also needs to be given to operation of cathodic protection systems. Consult your Health and Safety Representative for the latest requirements.

Cleaning Procedure

Contact your Health and Safety Representative for current procedures on proper tank cleaning procedures.

Replace all old gaskets before reassembling tank manhole covers, vents and other closure openings.



For proper disposal of sludge and hazardous waste, contact the Residual Management Coordinator.

6.3.19 - Tank Record Keeping

Terminal management will set up and maintain a permanent file for each tank in the terminal. The file must contain all available information since the tank's construction, such as original drawings, modifications, inspections, coatings, maintenance and repair records, etc. Records on the cleaning and inspection of each bulk storage tank must be in these files. This file will become the company tank record file, the file required by API 653 and, where applicable, the file required by DOT.

Send copies of inspection/cleaning/repair records to the local technical support person. Include this information in the tank files:

- Tank Number
- Tank construction records, including the Storage Tank Hydrotest Record (Appendix 6.19.3)
- tank inspection records, including repair recommendations
- repair records



If a repair recommendation is made, a note must be made next to the inspector's recommendation indicating whether or not the repair was completed. This note must be dated and initialed. This documentation is especially important for repairs not easily seen (e.g., inside or under a tank).

- Tank Closure Checklist (if used, Appendix 6.19.2)
- paint and coating records, including exterior paint, interior linings and coating on the underside of a tank floor (if any). Minimum data must include:
 - part of the tank that was painted
 - date
 - anchor profile
 - surface cleanliness (according to standards such as NACE 2 or SSPC SP-5)
 - number of coats
 - product names and numbers of primer and paint, and dry film thickness

Stencil the actual cleaning/inspection date in 2" letters onto the tank shell. Refer to Appendix 6.19.15 for all other tank marking requirements.



Tank cleaning and repairs necessitates preparing a new gauge table (recalculation) if the gauge table was developed before 1965. Tanks may also require restrapping. Refer to *Company Distribution Measurement Policy Manual* and local technical support for guidance.

6.3.20 - Switching Tanks

When considering reallocation of tank storage:

- consult with Head Office Management
- consider economics, supply availability and existing or imminent environmental regulations
- consult with Region management and quality assurance representative to determine if cleaning is necessary before switching products
- consult with region technical support to verify structural and mechanical suitability for service
- consult with region environmental support to determine provisions for proper air emission control.
- ensure flushing of all lines and their appurtenances when switching products.



Use care when changing the type of product in a tank. There can be severe implications in changing a product. Ensure contacting Region technical support to provide assistance.

6.3.21 - Calibration Of Storage Tanks

- Accurate gauge tables are essential to correctly determine tank volumes. Preparation of gauge tables must follow the methods and procedures in the applicable API/ASTM Standards.
- Only qualified personnel from industry-recognized tank strapping firms, using sound engineering practices, will compile gauge tables.
- Refer to *Company Distribution Measurement Policy Manual*, for detailed guidelines on calibration of storage tanks.
- The technical support person, in cooperation with Head Office Quality Assurance Measurement and Loss Control Department, will provide guidance.

6.4 - Underground Tanks

6.4.1 - General Policy

Consideration should be given to "daylight" terminal underground storage tanks.

Install new underground tanks only with Region management's specific approval and when other alternatives are inappropriate.

Never abandon underground tanks in place. Remove previously abandoned tanks as soon as possible. Region environmental support must approve any exceptions to this policy. Added testing requirements apply when a terminal closes and underground tanks remain on the property. Terminal management should request guidance from region environmental support.

Do not reinstall a used fiberglass tank unless it has been tested to confirm tank integrity and approved for reinstallation by the manufacturer. State or local regulations may require the manufacturer to re-certify the used tank.

Never reuse or reinstall a used steel underground tank. New underground tanks are to be fiberglass.

6.4.2 - Requirements for Underground Tanks

Any tank installed underground will be double-wall fiberglass. Double-wall steel tanks require approval from region technical and environmental support.

Fiberglass tanks may require an internal lining for specific product service.

6.5 - Vapor Control Systems

6.5.1 - General

Distribution terminals are required to have a vapor control system to control the vapors from marine and rack loading. There are two primary types of vapor controls systems.

1. Vapor recovery units (VRU) process the collected vapors and returns them to a gasoline storage tank. Vapor recovery units are typically more expensive to install and maintain however since they recover up to 2 gallons for every 1000 gallons loaded, there can be significant financial benefit in installing these systems. A rule of thumb is that if a terminal's throughput is greater than 15-20 MBBL per day a vapor recovery unit is beneficial from an economic perspective.
2. Vapor combustion units (VCU) destroy the collected vapor by combustion. Sometimes they require an assist gas to maintain a minimum regulated operating temperatures. They are not as expensive to install and maintain as VRUs. Some vapor products, such as neat Ethanol, have to be processed through a VCU (i.e. not a VRU due to product compatibility).

Either of these units can also be installed in conjunction with a vapor holder to limit the impacts of peak loading periods. See Section 6.5.7.

6.5.2 - VRU/VCU Inspections

The Vapor Control System (i.e., vapor recovery unit, vapor combustion unit, vapor bladder, continuous emissions monitor etc.) must be visually inspected each day for key operating parameters (e.g. temperatures and pressures) by the operators based on the manufacturers recommendations. Local management, assisted by region technical support and the equipment manufacturer are to develop the required inspection and documentation.

Local management and region management shall supplement daily vapor combustion unit (VCU), continuous emissions monitor (CEM) and vapor recovery unit (VRU) inspections with other necessary inspections at appropriate intervals to comply with local and state regulatory requirements or specific equipment operating requirements.

Verify and inspect the vapor control unit (VRU/VCU) equipment gauges and thermometers at least once a year to assure readings are correct. This is typically done through the VRU/VCU contractor during servicing; records supplied by the contractor, indicating that work was performed, is adequate.

If any readings are outside the allowed parameters, take immediate corrective action to ensure compliance with regulations and to prevent damage to VRU and/or VCU components.

6.5.3 - Maintenance of VRU/VCU

Detailed VRU/VCU maintenance instructions are beyond the scope of this manual. See VRU and VCU manufacturers supply instructions for trouble shooting problems and maintenance.

The VRU contractor must perform the following preventative maintenance periodically:

- obtain a sample of the vacuum pump seal fluid
- verify specific gravity and pH are within allowed parameters
- verify there is no biological activity in the seal fluid
- visually inspect the sample for evidence of carbon, and
- take immediate corrective action to prevent damage to the vacuum pump if any parameters are abnormal.
- Keep the lubricators full (when applicable).
- Others as manufacturer recommends.

The terminal must provide oversight to assure the VRU contractor is performing the above maintenance activities for their specific units.

Though VCU maintenance is minimal (e.g. pilot adjusted, burner tips cleaned, proper insulation etc.), the terminal still has responsibility to assure the proper inspections and repairs are done in accordance with manufacturers recommendations.

Maintain an inventory of critical spare parts to minimize downtime. The VRU and/or VCU manual normally contains spare parts recommendations. Rely on both previous terminal experience and input from the technician who maintains the unit to make the most appropriate additions to the spare parts inventory. Many parts are interchangeable therefore, neighboring terminals can sometime provide spare parts in an emergency. Periodic efficiency testing may be required as a condition of your local permit. If no efficiency testing is required by the permit, the company may choose to perform internal periodic efficiency testing to help ensure proper operating performance. Contact your Environmental Representative to obtain procedure, documentation and frequency of test.



Regulatory agencies will issue permits for vapor recovery units and vapor combustor units. These permits set forth reporting and operating parameters.

Periodically check all emergency shutdowns by actually creating the shutdown situations. Tripping a switch by hand is not a complete test. Records supplied by the contractor indicating that the VRU/VCU shutdown, is adequate. The equipment manufacturer's instructions specifically explain how, and how often, to check emergency shutdowns.



Retain a log of all malfunction shutdowns, along with a record of corrective actions.

Allow only authorized personnel to restart a vapor recovery unit or a vapor combustor unit. Post a VRU/VCU Shutdown Alarm Response Procedure. See Appendix 6.18.14.

6.5.4 - VRU/VCU Maintenance Contractor

Every terminal needs the services of a skilled technician for specialized VRU/VCU work. In addition to correcting failures, the technician provides a valuable service by performing thorough quarterly, semiannual and annual preventive maintenance inspections of the VRU and semiannual preventative maintenance inspections of the VCU. This skilled technician is typically a contractor who represents and is well trained in the specific piece of equipment.

6.5.5 - VRU/VCU Shutdown Alarm Response

Safety/Environmental Precautions

EPA clean air regulations set limits on terminal vapor emissions, depending on local ambient air quality standards.

Terminals must shut down operations that cause vapor release into the atmosphere when the Vapor Control System is not working. Consult with your environmental rep to discuss alternatives to continue operations.

Terminals equipped with TMS (Terminal Management System) can control loading rack volume throughput according to applicable federal, state and local regulations.

Locations can set a predefined volume threshold for TMS-controlled meters for a 24-hour period. When the meter reaches the threshold, TMS will deny loading rack access until the next 24-hour period begins. See the applicable TMS Guide for operating details.

Training and Documentation Requirements

Train all terminal personnel who may respond to a VRU/VCU shutdown alarm on the proper procedures.



Fill out a VRU/VCU Shutdown Response Procedure form, in Appendix 6.19.14, with names and phone numbers to call if a VRU/VCU shutdown occurs.

Place the completed form in a clear weatherproof cover and post it in visible location near the VRU/VCU control panel.

Update the posting whenever names and telephone numbers change.

Procedure When Responding to VRU/VCU Shutdown Alarm

The following are steps for responding to a VRU/VCU shutdown alarm.

Push the "alarm reset" button to turn off the alarm.

Log this event for future troubleshooting purposes.

Do not try to restart the unit unless you have authorization. (Assure restarts are done according to manufacturers recommendations.)

Call a supervisor, or terminal operator or other authorized personnel.



VRUs and VCUs with an annunciator display will indicate the cause when shutdown occurs. Be sure to correct the cause of failure before resetting and restarting. Restarting the unit before repair may cause damage to the equipment, such as damage to the vacuum pump if it does not have seal liquid flow.

6.5.6 - Vapor Lines

The following requirements are applicable to vapor lines.

- Ensure all vapor lines have a slight slope to a low point to allow removal of condensate.
- Check vapor line supports periodically for alignment and reset to proper elevations to avoid low places or deflection in the lines. (Condensate can accumulate in low places and corrode the thin wall pipe.)
- Drain the condensate line weekly or as needed to prevent forming a liquid seal in the vapor line or restricting the vapor flow.
- Occasionally insert a non-metallic rod through the condensate drain line all the way into the vapor line to ensure the drain is not obstructed by rust gathering over the outlet in the pipe.
- Vapors lines have installed PV vents to prevent overpressure. These vents are to be included in the Tank Vent and Flame Arrestor inspection or as other local permit conditions require. See Section 6.3.14.

6.5.7 - Vapor Holder

The vapor holder is a very important component in some recovery systems. It eliminates breathing losses, evens peak loadings and provides a dependable, flexible way to control vapor system loading.

These tanks may not be designed for product storage beyond residual condensate. Do not fill these tanks with product unless you are positive they are suited for product storage. (Consult with your technical resource). However, they are to be inspected using API 653 guidelines and on a similar cycle as your other API 653 tanks.

Vapor holders require little maintenance beyond periodic checking for leaks in the diaphragm. Some vapor holders store saturated vapor and may accumulate condensate, which is mostly hydrocarbon. Drain as necessary and salvage the condensate.

The following is a procedure for leak checks.

- Check the vapor space over the diaphragm at least quarterly, using an explosimeter
- Be sure the check is made from the top access vent/hatch when the diaphragm is under pressure, and about one-half to two-thirds inflated. Sampling may also be done at the equator scupper drain holes if additional verification is desired.
- Extend the explosimeter sampling probe to within a few feet above the stabilizer weight (dollar plate) or diaphragm.
- Check the explosimeter scale. A reading below 20% LEL is acceptable. However, readings are typically less than 10%. Routine reading above 10% must be investigated. Consult with your technical and environmental representatives. Vapor holders have installed PV vents below the bladder to prevent overpressure. These vents are to be included in the Tank Vent and Flame Arrestor inspection or other frequency to meet local permit conditions. See section 6.3.14.

6.6 - Corrosion Protection

6.6.1 - Cathodic Protection

Storage tank bottoms and underground piping must receive continuous protection from an impressed current or sacrificial anode cathodic protection system, to guard against external corrosion from soil conditions or stray currents.

The rectifiers can create a potential that can cause arcing when disconnecting equipment. Consult your local health and safety representative for special procedures. Keep rectifiers on at all other times.

Terminal personnel must inspect and record the date, rectifier volts, soil conditions (dry, wet, etc.) and amp reading on impressed current cathodic protection systems monthly. Tide levels must also be recorded at coastal locations since tide level may affect rectifier output. Region technical support and region management must be notified if the rectifier reading varies from an average of the preceding six months readings.

Region technical support will arrange an annual inspection of cathodic protection systems performed by certified corrosion professional technician at distribution terminals. Terminal management will receive notice of the scheduled inspection date.

6.6.2 - Painting and Coating

Appendix 6.18.15 provides guidelines for protection against atmospheric corrosion by painting aboveground piping, tanks and other equipment. Painting of tanks, pipes, etc. is not an aesthetic procedure. It is important to keep the coatings in serviceable condition to prevent more costly complete repaints in the future. All paint and coatings are to be coordinated with your local technical resource to ensure proper procedures, current specs, and material compatibility can be assured.

6.7 - Dikes and Drains

6.7.1 - General Policy

The following requirements are applicable to dike drains and the release of storm water.

- Each terminal must have a written operating procedure to manage storm water released from an outfall location. (i.e., visually inspecting water for evidence of oil sheen or contamination, testing of water quality if required, closing roof drain valves, conducting surveillance and documenting release, etc.). The plan must include the following.
- Establish a system of quick and easy visual indications of a dike and roof drain valve's status (open or closed) in the field and control center.
- Operators must visually inspect dike drain valves status (open or closed) daily and document on daily walk through checklist.
- Quarterly, operators must physically operate dike drain valves to ensure they work as designed. This must be documented.
- Close external floating roof drain valves before opening dike drains and keep roof drain valves closed during the entire time dike valves are open.
- A log must be maintained to include the time the dike drain was opened, who is responsible and the time it was closed. If person responsible is changed, log must be amended.
- The procedure must include a requirement that an operator be on site while water draining is going on, and that the activity must stop if the operator leaves the premises.
- The operator must visually inspect each outfall location, once every hour if operations allows or at least every 3 hours, during the draining procedure.
- The operating procedure must provide for dike drain valves to remain in the closed and locked position at all times, except when draining water from the diked area.
- Terminals must not drain dikes during product receipt, except during emergency situations such as during periods of heavy rainfall and only with verbal Local Management approval.
- Personnel involved with tank farm drainage activities must receive initial and annual refresher SPCC training. This training must be documented.
- Refer to your National Pollution Discharge Elimination System (NPDES) and/or Storm Water Pollution Prevention Plan (SWPPP) permit to ensure all requirements are being met.

6.7.2 - Spill Prevention, Control and Countermeasure Plan (SPCC)

The SPCC plan is the document that identifies preventative equipment, measures, controls, and countermeasures to address potential releases that may occur at a distribution terminal. The SPCC plan requires daily (when normally staffed) facility inspection to ensure primary containments (i.e. tanks, pipes, pumps, etc.) and secondary containments (i.e. dike walls, OWS systems, strip drains, etc.) are properly maintained and operating as designed and to identify any potential releases. These inspection requirements must be integrated into the daily walk through checklist. Refer to Annex 7 of the Integrated Contingency Plan (ICP) for details.

Secondary containment is required as an integral part of identified SPCC measures. A survey of tank dike capacity is required to be available onsite. Dike capacity can diminish over time due to settlement, wind and rain erosion, and wear from vehicle and pedestrian traffic. Dike containment should be periodically checked. If there is reason to suspect that the dike capacity is insufficient, consult with your Technical Rep. or your SPCC support personnel to determine whether a survey should be conducted to measure dike capacity around the tank(s) affected by the change.

Amendments should be made to the SPCC Plan for your facility in accordance with the general requirements in CFR 40, Part 112, and with any specific section of this part applicable to your facility.

Regular reviews of the SPCC plan must be conducted as follows:

- Annually, Local Management must ensure personnel SPCC plan training is completed.
- A least once every five years Local Management must complete a review and evaluation of the SPCC Plan, including the dike containment capacity; if your facility was in operation on or before August 16, 2002, a review must be conducted five years from the date your last review was required.



Unless there has been a material change to the terminal, a re-certification by a professional engineer is not necessary at the time of the 5 year review/evaluation.

- When there is a change in the facility design, construction, operation, or maintenance that materially affects its potential for a discharge, the amendment must be prepared within 6 months by Local Management, and implemented as soon as possible, but not later than 6 months following the preparation of the amendment. Examples of changes that may require amendment of the SPCC Plan include, but are not limited to: commissioning or decommissioning containers; replacement, reconstruction, or movement of containers; reconstruction, replacement, or installation of piping systems; construction or demolition that might alter secondary containment structures; changes of product or service; or revision of standard operation or maintenance procedures at a facility.

Refer to Annex 7 of the Integrated Contingency Plan (ICP) for details.

- **Consult with your HS&E representative for any questions related to the SPCC plan.**

6.8 - Product Piping Systems

6.8.1 - General

The following are general requirements for product piping systems.

- Region technical support will provide assistance with design and construction of piping systems, especially relief valves.
- Install new or replacement product piping above ground with proper supports and anchors. Locations may consider underground replacement or installation if there are compelling reasons to do so.
- Consider "day lighting" (bringing above ground) existing underground piping systems whenever maintenance or project work provides an appropriate opportunity. Unless mandated by regulations, base the decision to daylight on cost, condition of line and risk (i.e., will a needed and significantly lowered environmental risk justify the cost?). Work closely with Region management and region technical support to make these decisions.
- When "day lighting" underground piping systems, pay attention to proper disposal of the equipment being replaced (e.g., whether it can be purged and abandoned in place, or must be removed).
- Ensure product pressure-relief systems provide for temperature-induced product expansion around valves and pumps. Relief valve settings normally should be slightly higher than the pump's deadhead pressure on the discharge side of the pump.
- Consult with region technical support to ensure that pressure relief on tanks, lines or any other hardware meet all safety and design requirements.



Extreme care must be taken when installing relief valves in series if at all avoidable. If it must be done, adjustments to relief settings must be made.

6.8.2 - Clearing Product Lines

Clearing lines is the removal of product prior to conducting work. Typically the first option is to drain the product from the lines by gravity and by using a vacuum truck. Other options include pigging the line or blowing the line with nitrogen. Local operations, in conjunction with technical and HS&E representative, will determine which procedure is the best option.

Once the line is cleared the necessary work will dictate additional activities and precautions (i.e. hotwork and coldwork). Consult with your safety representative and technical resource to understand all additional requirements for the necessary work.



Never use compressed air to clear lines.

When reallocating a line (that needs no welding), flush the line with the new product until the line conforms to new product specifications. Prior to undertaking this action, consult with your QA representative, technical resource, Health and Safety, and Environmental representatives.

6.8.3 - Filters

Follow the instructions on filtration of aviation products in Section 9, Aviation. Filters may be necessary if local conditions do not allow settling time for incoming receipts of motor gasoline. Filters may be necessary to remove abrasive or harmful material (e.g., particles, rust, rouge) that could get into the product during transportation handling. Never ship dirty product.

If installation of non-aviation filters is necessary, develop local operating maintenance and inspection procedures with assistance from environmental and technical representatives.

Refer to Section 6.10.8 for Strainers.

6.8.4 - Product Piping Inspections

All Terminals must periodically ensure the integrity of existing product piping. This section provides minimum requirements to ensure integrity. Local management or region management may take additional measures, with support from region technical support.

Requirements in this section are not intended to contradict regulatory requirements. Regulations will take precedence if any apparent conflict arises. Terminal management must communicate such conflicts to region management

Guidelines for Coastguard Piping

Annually test all piping that meets the U.S. Coast Guard's definition of **oil transfer pipe system**. Locations may consider an API 570 inspection in lieu of annual hydrotest. Consult with your region technical support.



Local agency inspection/testing requirements supercede the guidelines in this document.



The Coast Guard defines **oil transfer pipe system** as one that extends from the last valve inside the EPA-required containment, through the transfer pipe, and to the dock loading arm or vessel manifold.

General Guidelines (Aboveground and Underground Piping)

Terminals must request region technical support to inspect any line in which the integrity is suspect.

Document the inspection and all repairs or modifications to product piping systems or coating on Pipe and Crossing Report, Appendix 6.19.18.

Guidelines for Underground Piping

For offsite underground lines, that are owned/maintained by the company, visual surveys of surface conditions (i.e. any soil staining, pipe markers present and maintained, area above pipes clear of vegetation and debris, etc.) along and adjacent to offsite pipeline routes servicing the Terminal should be conducted. These visual surveys should be completed twice a year at approximately 6-month intervals. Local Terminal personnel are responsible for completing and documenting the visual inspection on the Underground Pipeline Easement and Surface Inspection Form, Appendix 6.19.27.



Oversight of surface conditions along and adjacent to onsite underground lines is covered during daily walkthrough.

In addition, for all offsite underground lines, that are owned/maintained by the company, perform an API 570 inspection by January 1, 2006 and establish an inspection interval. This inspection will be coordinated by your technical resource. The report must be retained at the Terminal in order to perform any additional inspections (if needed), to identify the next inspection cycle, and to be used as a reference during the next inspection. Terminal Management must work with Technical Rep. to establish the next inspection date.

For onsite underground lines, specific line visual inspections are not required, as this inspection should be covered under the routine ICP/SPCC Plan Inspections.

In addition, for all onsite underground lines, perform an API 570 inspection by December 31, 2008 and establish an inspection interval. This inspection will be coordinated by your technical resource. The report must be retained at the Terminal in order to perform any additional inspections (if needed), to identify the next inspection cycle, and to be used as a reference during the next inspection. Terminal Management must work with Technical Rep. to establish the next inspection date.

Inspect pipe and coating for signs of corrosion or coating deterioration when exposing



Annually, local Terminal management is to discuss and strategize onsite and offsite underground pipeline inspections to occur in the next 12 to 18 months with their project coordinator (during this session, dock inspections and API 653 Inspections for tanks should be discussed – Reference Sections 6.3.6 and 6.11.3). Local Terminal management will also coordinate all downtime activities with Supply. Consideration must be taken for peak demand periods.

underground piping for any reason. Document findings on Piping and Crossing Report, Appendix 6.19.18. Contact your technical resource or a qualified contractor if needed.

If locations are known, evaluate underground piping segments that could trap water (e.g., dead legs, sags) to determine whether internal corrosion is present. When practical, remove such segments.

Inspect cathodic protection systems monthly and annually according to Section 6.6.1.

The following additional inspection measures may also be considered:

- API 570 inspection
- pressure testing
- acoustic testing
- selective excavation and inspection
- ground penetrating radar
- tracer testing
- internal inspection via instrument (e.g., smart pigs)
- close interval survey
- guided wave

Consult with region technical support for guidance to choose the appropriate option.

Guidelines for Aboveground Piping

Visually inspect aboveground piping during daily walk-through inspections. Conduct a detailed visual inspection annually to investigate pipe integrity. Qualified terminal personnel or qualified contractors are to complete this inspection.

The annual inspection must include, but not be limited to, these areas:

- outside of pipe, painting/coating systems and associated hardware (i.e., supports, hangars, valves, pressure-relief valves, etc.)
- signs of misalignment, vibration and leakage
- underside of pipe, especially support contact points

Extensive corrosion and pitting may develop in this area due to moisture condensation on the pipe surface.



Hand scraping or wire brushing may be necessary to determine the extent of corrosion.

- transition zone from aboveground to underground piping (soil/air interface)

The transition zone extends from approximately 12 inches below to 6 inches above the ground surface (API-570). Cathodic protection is often ineffective in the transition zone, and coating damage is common due to grounds-keeping activities, soil movement and thermal expansion/contraction of the pipe. The zone includes piping running parallel and making contact with the soil.

Inspect the aboveground portion of the transition zone coating. Repair or replace coating that is damaged or disbonded (e.g., sagging, blistered). Inspect the pipe for corrosion before repairing or replacing the coating.

If a transition zone coating was not previously installed, excavate the transition zone and inspect pipe for corrosion. Apply a transition zone coating before backfilling.

Consult with region technical support for guidance on selecting and applying an appropriate transition zone coating.

- piping supported by pipe supports of non point-to-point style (pipe saddles)

This support will trap water against the pipe. Inspection may require lifting the pipe clear of the support and then cleaning to determine presence and extent of corrosion. Results may suggest changing the pipe support design.

- piping covered by insulation

Corrosion can occur unobserved when water gets under insulation. Remove insulation if the caulking has failed or there are signs of swelling under the insulation. Inspect the pipe and then install new insulation.

- dead legs

Extensive corrosion may develop in this kind of piping configuration due to trapped water and sediment. Remove dead legs whenever practical. If removal is impractical, consider draining the trapped water and sediment from a low point drain periodically.



Results must be documented and communicated with technical resource for additional inspection and/or repairs.

Local management or technical resource may also take the additional inspection measures listed below:

- pressure testing (using liquid only)
- ultrasonic wall thickness testing
- magnetic flux exclusion testing, and
- internal inspection via instruments.



Consult with region technical support for guidance to choose the appropriate option.

Drain Piping

Consider pressure testing of gravity drain piping periodically. A stand pipe test is recommended for these low pressure lines.



Review construction standard on drain piping. Some older drain lines might be constructed of clay.

Relief Valves

Ensure product pressure-relief systems provide for temperature-induced product expansion around valves and pumps. Relief valve settings normally should be slightly higher than the pump's deadhead pressure on the discharge side of the pump.



Extreme care must be taken when installing relief valves in series. If it must be done, adjustments to relief settings must be made.

The following requirements are applicable to relief valves.

- Pipeline relief valves within the terminal must be tested annually.
- Thermal relief valves, at a minimum, must be tested every 2 years.
- Relief valves on the pumps must be reviewed if they are relieving frequently.

Consult with region technical support to ensure that pressure relief on tanks, lines or any other hardware meet all safety and design requirements.

6.9 - Temperature and Gauging Devices

Refer to *Distribution Measurement Policy Manual*, for temperature and gauging device guidelines including calibration requirements.

6.10 - Loading Racks

6.10.1 - General

Loading rack facilities are best observed while a vehicle is being loaded. The mechanical components of Product Distribution loading racks provide for safe and environmentally sound product transfer when used according to established procedures. The prevention of fire and explosion from electrostatic sparking and the prevention of truck or rail tank overfill must be primary considerations in the loading process.

This section provides details about components common to most loading racks.

6.10.2 - Meters

The following are the types of meters found at loading racks:

- turbine meters
- positive displacement meters

Refer to the *Company Distribution Measurement Policy Manual* for prover calibration frequency and procedures.

6.10.3 - Meter Pre-sets

When a driver gains authorization to load, the preset allows the driver to input the desired amount of product to be loaded into the compartment. The preset communicates with the flow control valve to adjust the flow at established rates. As the preset volume nears completion, the preset signals the flow to decrease and eventually stop the product flow.

There are two primary types of meter pre-sets used:

- Mechanical – Mechanical pre-sets are an older version of what is currently being used. They operate through gears and are primarily mechanical in design and operation. Mechanical pre-sets are being removed from service as equipment upgrades are made at the terminals or when reliability and maintenance costs become excessive.
- Electronic – Electronic pre-sets perform the same function as mechanical pre-sets, however they are much more reliable, accurate, and have more functionality. As such, electronic pre-sets are used exclusively when upgrades are made. There are several different manufacturers of these units, however the current trend is to upgrade to TopTech Multiload systems. These are 100% compatible with the TopTech systems currently in use.

6.10.4 - Control Valves

General Operating Requirements

Control valves control product flow through the meter and into the truck compartment. Control valves are the primary piece of equipment that controls the flow during start-up, normal loading, and shutdown. Without a properly functioning and adjusted control valve the risk of truck overfill increases and product measurement will not be as accurate.

There are typically two types of valves currently being used throughout the Terminals, the Smith Meter Model 210 control valve and the Brooks Model 788 digital control valve. The Smith valve is a diaphragm operated flow control valve. The Brooks valve operates on a balanced piston principal. Each valve functions to control total flow rate as well as how quickly it reacts to change the desired rate of flow. If a different type of control valve is currently in use, please consult your technical resource for guidance.

Control Valve Adjustment

The following requirements are applicable to control valves.

- Program flow-control valves to initiate product flow at a slow-fill rate (typically 120 gpm) before opening valves to high-flow conditions.
- Never allow high-flow rates to exceed 600 gpm or the meter's rated capacity, which is stamped on the meter's information plate, whichever flow rate is lower.
- Set the flow control valves to gradually reduce flow rate down to the point of shutoff when the compartment is within 50 to 75 gallons of the set amount. This gradual reduction will avoid sudden valve closure and line shock.
- Adjust flow control valves so flow at the high rate will stop in 1 1/2 to 2 seconds. These times correspond to 15 to 20 gallons at a flow rate of 600 gpm. This setting will prevent truck compartment overfills when the valves are properly adjusted and truck compartment freeboard is sufficient.
- Be sure to set the trailer compartment sensor at an elevation that allows enough compartment freeboard to accept 15 to 20 gallons during valve shutdown. (Allow freeboard of 3 percent of compartment size.) The sensor setting is critical because trailer compartment sensors signal the flow control valve to close.

Typically start-up and shutdown parameters which control valves are adjusted for are detailed below. Refer to manufacturer's literature or contact your technical resource for adjustment procedure.

Typical Start-Up Cycle:

Gasoline: First stage start up - slow flow. 120 gpm for 15 seconds (3 fps in a 4" line)

Distillate: First stage start up - slow flow. 120 gpm for 360 gallons (3 fps in a 4" line until the fill line outlet and deflector, when provided, is submerged by at least two fill line diameters inside the truck compartment.)



Distillates have a more conservative (longer) start up time due to static generation concerns. Refer to Switch Loading

Operations Procedure to determine if a less stringent submergence requirement is allowable in your locations.

Maximum loading rate 600 gpm (maximum flow rate)

Typical Shut-Down Cycle:

Maximum full flow 600 gpm

First stage shutdown 60 gpm for last 50 gallons of pre set volume

If your Terminal equipment has the ability for a second stage start up or shut down, consult with your technical resource for intermediate settings.

Control Valve Inspections

Visual inspection of each control valve must be conducted at least quarterly. This inspection must be a sight, sound inspection observing for erratic operations, specified flows, etc.

Full detailed inspection of control valves by full disassembly is based upon usage. This includes inspection of all components, repair as necessary and recalibrate all settings.

All control valves must undergo a full inspection every 766,500,000 gallons or 5 years whichever comes first. (The inspection cycle is based upon 10MB/D every day for 5 years or a maximum interval of 5 years. It is doubtful that any riser loads at the 10MBD rate, therefore, the five year cycle is the typical inspection cycle. This equates to 766,000,000 gallons or 18,250,000 barrels). Documentation to track which valves were inspected and when should be locally developed.

6.10.5 - Vapor Hoses

Vapor hoses are used to transfer vapor from a truck to the terminals vapor collection system during truck loading.

The following requirements are applicable to vapor hoses:

- Ensure vapor hoses are equipped with a check valve or that there is a check valve at the rack to prevent backflow of hydrocarbon vapors to the atmosphere. The check valve should be quick-acting, requiring minimal force to open it. A low pressure drop is another important design factor in the overall vapor processing system.
 - The hose is to be equipped with a bonding wire to assure electrical continuity between the truck and the loading rack.
 - Store the hose when not in use to keep vehicles from running over it and to prevent tripping hazards.
- Follow inspection and testing guidelines for product transfer hoses according to Hose Testing Schedule - Terminal Gravity (all products) in Appendix 6.19.9.

6.10.6 - Additive and Dye Injection

Terminals must have procedures in place to effectively monitor additive and dye injection daily. TMS (Terminal Management System) provides data and reports to assist with this function. But these reports should not be relied upon exclusively. In addition to utilizing TMS reports and controls, terminal processes must include other means of independently verifying additive injection compliance including:

- comparing additive meter readings with product meter readings at the close of each folio to verify injection rates
- comparing the additive physical inventory change with product meter readings/throughputs to verify injection rates
- closely monitoring additive inventory loss/gain for significant variations and/or consistent patterns of gains (may indicate under-injection) or losses (may indicate over-injection), and
- performing routine operational checks on the injection equipment such as listening for the clicking of the piston as it moves in the injector and watching the movement of the display on the additive injection meter; and recalibrating meters as required.

At Terminals where TMS uses Hi-level communication to monitor loading rack meter shut down in case of failure (Multi-load, Electronic Presets, Opto-Panel, Smart Injector Titan, Mini-Pak, Blend-Pak), each month the Terminal must review the Meter Profile in TMS for each meter to assure the **Feedback Flag** indicator "P", "O", or "S" is enabled.

Note: If the **Feedback Flag** indicator is an "N", the Hi-level communication is disabled and/or unavailable. At Terminals where TMS does not control and monitor additive injection, either PLC or multi-load will serve as an acceptable alternative system for shutting down a loading arm in case of injector failure.

The review must be documented in InControl.

Refer to Section 9.0 of the Company Distribution Measurement Policy Manual for guidance on additive systems calibration.

6.10.7 - Rack Isolation Valves

Each lane must be equipped with quick-closing isolation valves on each riser to shut off flow to the loading arms. These valves shut off product flow if any part of a single loading riser fails. The valves can be manually operated, but must be easily accessible in an emergency. These valves must be fully closed and opened at least annually to assure they will operate properly when needed.

Install shutoff valves on each product line feeding a truck rack. These valves assist with shutdown if a major loading rack failure occurs. Establish a regular maintenance inspection program for operability of isolation valves. This can be performed during rack maintenance.

Make sure all rack isolation valves are clearly identified as to location and product. Truck Operators should be shown the locations and purpose for the valves.

6.10.8 - Strainers

The purpose of the strainer is to remove residual particulate, welding slag, scale, sediment and other debris from reaching the meter, control valve mechanism or control valve orifices, which in turn may prevent the system from operating as designed. Typically, debris may prevent the control valve from operating properly and may prevent closure when required.

Strainer mesh should be 80 mesh wire baskets for gasoline and 40 mesh wire baskets for diesels and jet fuel. No mesh finer than 40 mesh should be used for distillates, due to the restriction of flow and thus increased risk of static generation in the line. Dual basket strainers can also be used; i.e. 10/80 mesh for increased strength and is particularly helpful when used in conjunction with turbine meters.

Inspect the mesh strainer baskets located immediately upstream of the meter for these defects:

- Mesh and basket deterioration or damage
- holes in the mesh, and
- debris clogging the screen.
- Improper seat that would allow debris to bypass the strainer basket.

Perform this inspection annually or more frequently if locally required. Indications of clogged strainers could be a reduced flow. More frequent monitoring is required when maintenance/welding has taken place on a line.

Take precautionary measures to avoid inhaling gasoline vapors or spilling product when opening lines and inspecting strainers.

6.10.9 - Flame and Detonation Arrestors

Flame/Detonation arrestors are devices that prevent flame propagation through the line. Flame/Detonation arrestors are typically located in the vapor line at each lane or on the vapor header. See Section 6.3.14 on flame arrestors on tanks.

Annually check the loading rack flame arrestors by measuring and recording the backpressure at the loading rack or some other point upstream of the flame arrestor. Clean the flame arrestor if backpressure is excessive or has increased significantly since the last backpressure check. If the backpressure is approaching 18 inches of water, consult with region technical support. Locally developed forms are acceptable.

6.10.10 - Drains and Oil Water Separator

Since systems will vary by locations, specific inspection and maintenance requirements for each system and component will need to be identified. Contact your technical support to assist in identifying these specific requirements. Typical requirements are listed below:

- Monthly inspect the separators for general appearances and operations. (Leaks, odors, unusual noises, valves, pumps and alarms properly working).
- If aboveground, annually inspect the exterior for possible rust, corrosion and paint deterioration. When the OWS is emptied (e.g. during cleaning), inspect the interior for possible rust, corrosion and lining deterioration. For technical assistance, contact your Project Coordinator.
- Maintain the operating water level at full in the separator. The level is established by the invert of the outlet pipe.
- Solids will collect in the Interceptor/Distribution chamber. Sludge should be removed every six months or as required by the individual site condition. Periodically clean collection points and strip drains. (Take opportunities such as tank cleaning if being performed)
- Be sure the oil level is checked and removed when it reaches the removal volume recommended by the manufacture. If a skimmer is used, be sure it is operating properly and the drain is free from obstructions.
- Always refill the separator with clean water each time oil or sludge is removed. If it is removed automatically the separator should recharge itself and maintain the proper operating water level. (Fill from the discharge side).
- If the separator has internal plates or packs, they must be inspected at a minimum once a year for blockage or film and sludge build up. Use a wand inserted between the plates to fully clean, then visually check the plates for cleanliness and damage before putting back into service.

- It is very important to check your separator and all components after a storm events that causes flooding conditions and/or wash out the system piping, oil spills, and any unusual events that may cause the build up of sludge or debris in the system.
- Periodically check the separator to maintain a level elevation of the housing to assure the separator has not settled. This could cause separator failure or improper oil removal.
- Make sure flow control device (Orifice) is working properly. An inlet valves should be used to control flow if an orifice is not used.
- If possible check strip drains before thunderstorms.

Appendix 6.19.5 provides a guide in establishing a schedule and documenting the inspection and maintenance on an Oil Water Separator. An alternative form can be created specific to that location.

6.10.11 - Dry-break Connectors

Liquid and vapor dry-break couplers connected to truck must not show evidence of excessive drips or leaks.

6.10.12 - Terminal Management System (TMS)

TMS is a computer-based system that controls terminal security and loading access and provides product accounting detail.

Refer to the *TMS Manual* and the *TMS Stock Accounting Manual* for operating details about TMS..

6.10.13 - Emergency Shutdown Systems

All emergency shutdown systems must be kept operational. Three types of emergency system shutdowns exist; a single arm shut down, a single lane shut down and full rack shut down, i.e.: ALL loading lanes and positions. Once any of the emergency shutdowns is activated, the corresponding flows should completely stop within 2 – 3 seconds. Each type of emergency shutdown must be tested at least annually under normal operating conditions. By testing under normal operating conditions, assurance is obtained that the entire system, including components will work as designed. Documentation to track which ESD systems were tested and when should be locally developed.

During shut down events the VRU/VCU should continue to operate as determined by the Terminal Management and technical resource to process residual vapors and prevent excess emissions from entering the atmosphere. Do not make any changes to the process you are currently using concerning VRU/VCU shutdown operation until you have consulted with your technical resource.

Emergency Loading Arm Shutdown

This is a manual shutdown activated by depressing a button on the preset, which controls a specific loading arm. Once activated, flow through the loading arm should completely stop within 2 – 3 seconds. Activation testing should occur for each loading arm on an annual basis.

Emergency Lane Shutdown

The lane emergency shutdown occurs when product activates a overfill probe, if any of the overfill or bonding systems are disconnected or a fault occurs. The overfill protection

system should signal closure of the control valve within a half second from the time the overfill probe is activated. Once activated, flow for the entire lane should completely stop within 2 – 3 seconds at maximum flow rate. Activation testing should occur for each loading lane on an annual basis. This can be done by disconnecting the high level and or bonding plug.

A 'Lane Stop' (vs. a rack Emergency Shutdown) button may exist (typically with Multiload presets). If this button is depressed, all permissive to allow loading will drop to the presets and the entire lane will stop.

Emergency Rack Shutdown

This shutdown is manually activated by depressing the "Emergency Shutdown" button on any lane in the event that protection of health, safety or environment is necessary or when other shut down systems fail. This shutdown should be installed such that when activated, all control valves should close, all rack pumps should stop immediately, all loading activities should cease until the problem is resolved and loading operations are approved for resumption. Once activated, flow to the all-loading arms should completely stop within 2–3 seconds. Activation testing of an emergency shutdown should occur on a particular lane under full flow conditions. The other lanes can be done without flow and verify that the gates, open, pumps turn off. The full activation testing should be done on a rotating basis to assure all lanes are fully tested (i.e. for a three lane rack, each lane is tested every three year).

6.10.14 - Rack Security

Refer to Section 6.14 for loading rack equipment sealing requirements. Rack sealing requirements are in place to prevent product theft. They must be installed at any location at the rack area where product can be drained or in the metering system where meter pulses/indications could be interrupted. Flange bolts do not require such sealing. Terminal Management System (TMS) controls access to the loading rack by validating equipment and driver/operator. TMS records all system-controlled rack transactions and system function access in an activity log for review.

6.10.15 - Bonding/Grounding

Bonding is the process that allows two pieces of equipment to carry the same electrical charge. Grounding is the process that ensures there is no electrical charge on a piece of equipment (i.e. the same charge as earth).

Trucks and trailers must be electrically bonded to the loading rack before loading to assure that no static electricity is created. The rack structure itself requires proper grounding to avoid stray electricity hazards.

The stand alone bond cables (if present) and those in the loading arms, vapor hoses, and truck overfill systems provide bonding at bottom-loading racks. Note that the bond cable in loading arms supply adequate bonding alone. Use a separate bonding cable at top-loading racks.

Use an ohm meter to check the loading rack bonding system every 6 months. Check by taking a resistance reading between the fixed pipe upstream of the loading arm and a vehicle while loading. Note a clean (i.e. free of oxidation, paint and rust) contact is needed for a good reading. The reading should be 5 ohms or lower. A resistance higher than 5 ohms may indicate a poor bond. A poor bond could be a result of a broken bond wire and/or worn couplers or swivels on loading arms.

6.10.16 - Delivery Vehicles Inspections

All terminals with fleet delivery vehicles, refer to *Company Fleet Operations Policies and Procedures Manual* for current policies. All other policies pertaining to common carrier delivery vehicles are in Section 10 of this Plant Manual. Drivers on each shift must make pre- and post-trip inspections of the vehicle they will operate (Department of Transportation requirement).

Drivers must document the inspection on the "Driver Vehicle Inspection Report." If another form is used for any reason, it must contain all the elements of the "Driver Vehicle Inspection Report," at a minimum. For more information, refer to the *Company Fleet Operations Policies and Procedures Manual*.

Terminal management has oversight responsibility for random inspections of all vehicles loading at the terminal. See Section 10 for more details.

6.11 - Marine Facilities

6.11.1 - Overview

Refer to the following for operational guidance and inspections at Marine facilities:

- Receipts, Section 3
- *STASCO Marine Terminal Operations Manual* (November 2003 edition)
- *Marine Terminal Guide* (Site Specific)
- *International Safety guide for Oil tankers and Terminals* (ISGOTT), 5th edition.

6.11.2 - Depth Soundings

The following are requirements for depth soundings.

- All coastal and inland terminals with dock facilities will make an annual depth survey of the berth and approaches. Annual soundings of approaches are not required when a federal, state or local government agency has responsibility for surveying the approaches. In such cases, request a copy of annual soundings from that agency.
- Sounding surveys must be retained to create a historical siltation profile. Based on this historical data, the frequency of depth sounding surveys can be reduced or increased after consultation with the local Marine Technical Advisor and STASCO Shipping Operations. It may be necessary to make a repeat sounding survey after a hurricane, flooding or other meteorological event.
- Terminals suspecting a reduction of the water depth at the berth (e.g., vessel prop wash causing localized shoaling) should request a depth survey to verify the existence and localization of any submerged obstruction or shoaling.
- Local contractors with proper equipment should perform depth soundings to ensure accuracy.
- Contractors will take depth soundings portrayed in a grid pattern. Region management and STASCO Shipping Operations will establish the size of the grid. The local USCG Captain of the Port may also have a specified maximum grid pattern for the port and soundings must comply with this requirement.
- The Terminal Manager will forward a copy of the sounding survey to the local Marine Technical Advisor and the Technical Manager. The terminal should also retain copies of the map.



Contact region technical support and/or Marine Technical Advisor to assist with the above requirements.

6.11.3 - Marine Dock Inspections

It is vital that the structural integrity of each dock is maintained therefore the following inspections must be performed:

- Visually inspect the dock above the waterline annually. A qualified Motiva employee or contractor shall perform this inspection. Document any deficiencies such as structural corrosion, damaged/worn timber concrete cracking and mooring hook/bollard degradation. Documentation must be retained at the Terminal. Make any repairs that are of immediate concern.



Even, inactive docks must be visually inspected once a year to assure structural integrity.

- A qualified engineer must inspect the dock above and below the water. The inspection will include a detailed visual inspection and ultrasonic testing if needed. The report with recommendations must be retained at the terminal. Appropriate repairs must be performed based on the recommendations. The frequency of this inspection is based on the condition of the dock but cannot exceed 5 years. The engineer must also recommend the next inspection period the dock. Coordinate this inspection with your technical resource. Refer to Marine Terminal Operations Guide, Section 5.1.4, Structural Surveys.

6.11.4 - Marine Dock Insulating Flanges

Marine dock insulating flange are used to electrically isolate the vessel from the dock to eliminate arcing between the two. Bonding cables to the vessel are not to be used on the dock since they defeat the purpose of insulating flanges. The insulating flange should be located at the most outboard permanent flange and it must be on the vessel side of any support or member attached to the dock structure. It is important that no actions be performed that might compromise the insulating properties of the insulating flanges. Activities, such as painting over an insulating flange, can compromise the insulating qualities of an insulating flange, thus rendering it ineffective.

Test the resistance of insulating flanges annually to ensure a measured value of at least 1,000 ohms. A lower resistance value may indicate damaged or deteriorated insulators. Refer to ISGOTT, Fifth Edition, 17.5.5.2 for further information on this requirement. Test insulating flanges more frequently as detailed in the STASCO Marine Terminal Operations Guide, Section 5.5.7.1, Insulating Flanges, if resistance is consistently lower than the requirement.



The line must be void of product on one side of the insulating flange for a valid test.

6.11.5 - Transfer Hoses

Follow inspection and testing guidelines for product transfer hoses according to Hose Testing Schedule in Appendix 6.19.9 and the *Marine Terminal Operations Manual*, Appendix 6.



Information in the guide is valid, but does not include information on composite constructed hoses.

Replace marine dock hoses after 10 years of service.

Mark marine hoses with these elements:

- "Oil Service" or name of product for which hose may be used
- maximum allowable working pressure (MAWP)
- date of manufacture, and
- date of last hose test.



Marking the date of manufacturer and last test date on the hoses is not necessary if the hose markings indicate this data is available elsewhere in the terminal.

Keep marine hose inspection records at the terminal. Include this data:

- manufacturer's name
- date of purchase and date hose placed in service
- hose brand and serial number
- rated working pressure, and
- test dates and test pressures.

6.12 - Buildings, Yards and Fencing

6.12.1 - Drawings

Terminals should consider maintaining onsite a complete set of engineering quality "as-built" drawings accurately depicting property lines, fence lines, buildings, equipment, piping, etc. Technical Department has primary responsibility for preparing and maintaining these drawings for projects. Terminals have responsibility for ensuring that the Head Office knows about equipment and piping changes and that drawings are updated as appropriate.

Terminal should also have on file a copy of general electrical classification drawings (i.e. not site specific). Request this document from your technical resource.

6.12.2 - General Policy

Terminal management should frequently inspect terminal facilities and equipment personally to ensure adequate maintenance and good housekeeping, and to observe for safe working conditions.

Properties and facilities must always present a clean and orderly appearance.

Employees must be knowledgeable on their terminal maintenance responsibilities, as well as training on how to do their jobs.

Terminal personnel must immediately clean up product leaks or spills and take corrective action to prevent recurrence. Proper reports and notifications must be filed. Product leaks or spills are unacceptable.

Plant management should consider using contractors to maintain top standards if other duties prevent permanent personnel from accomplishing housekeeping chores.

The Motiva Technical Manual contains guidelines for office buildings, warehouses, garages, paving, fencing, parking lots and fire protection. Consult with your technical resource. The Region Manager will provide guidance or engineering support for facility changes.

6.12.3 - Safety and Health Standards

- All company facilities are regulated under OSHA requirements. Certain facilities as well as delivery equipment and truck drivers may have additional requirements under DOT. Refer to your technical resource and the company *Fleet Operations Policies and Procedures Manual*.



Consult with your Safety Representative for any questions on any OSHA, safety or health matters.

6.12.4 - Painting and Identification

Follow guidelines on terminal paint colors and decal identification in Appendix 6.19.15.

6.12.5 - Nonproduct Pressure Vessels

Vessels operating at gauge pressures of at least 15 pounds per square inch or higher and do not contain hydrocarbon product shall be inspected in accordance with API 510 (e.g. air compressor).

Local management, along with region management, will request the region project coordinator to establish the requirements and provide the inspector and forms for these inspections. There may be state or local certification or license requirements. Local management will assure the documents are current and posted

6.13 - Property Damage or Loss

A loss and damage record is to be completed whenever damage occurs by way of vehicular accident, personal injury, weather such as hurricanes, hail, wind, rain and flood, theft, security violations, explosions, etc. Also included is damage Motiva causes to others as well as what others cause to Motiva.

It is important that all necessary information and facts be recorded to properly represent the circumstances. Communications must be established with all appropriate internal departments and external contacts, depending upon circumstances. Some examples are financial, marine, procurement, legal, insurance, operations representatives, retail and other customers, technical resource to aid in repairs, supply, H&S and environmental representative, local law enforcement, etc. Careful management of the response and repairs must be undertaken to assure ALL costs related to the incident are tracked to help assure reimbursement from responsible parties, if recoverable.

For vehicular accidents, personnel injury, environmental occurrences, consult with your Health & Safety Representative / Environmental Representative and current guidelines in the Incident Management System.

For theft or other security losses, refer to your Security Manual and contact Corporate Security and your Security Representative.

Other property loss and damage not identified above is to be reported to your Head Office Operations Representative for guidance on current administrative procedures.

Note that many loss and damage incidents will cross many areas of responsibility. Your Operations Representative can provide assistance and help clarify the necessary actions and responses.

6.14 - Terminal Security Sealing/Environmental Sealing and Padlocking

6.14.1 - Overview

Terminal management is responsible for checking and verifying all Terminal security/environmental seals. Terminal management also has the responsibility to control all padlocks and keys and ensuring their integrity.

Sealing and padlock locations depend on local conditions and local management requirements. Terminal security sealing or padlocks are required at:

- seal truck load rack equipment, and
- seal all points of access where tampering could affect measurement of product quantity or quality, or where unauthorized withdrawals could be made. (See Appendix 6.19.24, 6.19.25, and 6.19.26)
- padlock all closed tank valves, pipeline manifolds, dock manifolds, water draw valve, air bleed valve and low suction when not in use.
- other locations required by your security plan and local minimum standards

6.14.2 - Seal and Padlock Design

Seal Design: The most common seals found at all locations are E-cup seals. When installing E-cup seals, ensure that the wire twists fit securely in the cup, have no slack and pass through all pertinent points in the system being sealed. Existing E-cup seals are acceptable until June 1, 2005. Seals installed after this date must be of the Plastic Wire type (Brooks Toolless Roto-Seal or equivalent) or Cable type (Brooks Cable Seal 2000 or equivalent). Some locations may have state weights and measures regulations requiring placement of a state-numbered seal on the meter calibration adjustment.

Padlock Design: Terminals must have a padlock system that allows Terminal management to control access to the locks and keys. This includes a key registry log.

6.14.3 - Inspection Responsibility, Method and Frequency

Terminal management shall assume responsibility for inspecting and verifying the integrity of seals and recording seal numbers once a quarter at the minimum. Seal security and padlocks must also include random inspections. Any seals that are found to be illegible and/or damaged must be replaced at this time.

Locations with company equipment maintained by terms of a contract (e.g., pipeline, third party or exchange agreement) will designate a representative for random inspections.



Terminal personnel will record Terminal security sealing activities in InControl. Data recorded in InControl should include: Seal Group, Seal Location, Date Inspected, Person Inspected By, Seal Number, Reason for Replacement (if applicable), New Seal Number (if applicable), Date Replaced (if applicable).

6.14.4 - Disposition of Old Seals

Ensure used seals are not reusable before properly disposing of them. Old seals can easily serve illicit purposes.

6.15 - Hose Inspection and Test

6.15.1 - Overview

This section covers hoses that carry product (i.e. rack, vapor and marine hoses). Hose failure may be a source of spillage and may result in a hazard.

Reasons for hose failure include:

- shock pressures beyond the hose's designed working pressure
- mishandling, flattening or crushing
- continual exposure to severe weather
- excessive end pull
- dropping, and
- sharp bending or kinking of the hose
- non-compatible products.

The visual inspections and test procedures in this section will help to detect weaknesses in hose structure assemblies before the weakness causes the hose to fail.

6.15.2 - Inspection And Testing Schedule

See the Hose Testing Schedule in Appendix 6.19.9 for minimum requirements on test type, testing frequency and inspection records to maintain. Hose testing includes visual inspection and hydrotest. See Appendix 6.19.7-8 for the procedure of these tests, Refer to the Marine Hose Guide for additional instructions and procedures covering dock hoses. 6.15.3 - Visual Inspection

The following are requirements for visual hose inspections.

- Follow the Quarterly Visual Hose Inspection Procedure in Appendix 6.19.7.
- In addition to routine visual inspections, terminal management or other designee must make a more formal visual inspection each quarter and record the results.
- Ensure operators and drivers regularly note the condition of the hose they are using. Drivers should note on their vehicle defect report any unsatisfactory delivery hose conditions. Operators must be aware of the condition of a product transfer hose before placing it in use.
- Immediately withdraw from service any hose that appears damaged or in need of repair.
- Hydrostatically test or replace the hose before returning to service if the repair work might affect the hose's strength or durability. If a hose failure or damage is found during inspection, a hose should be replaced not repaired.



If assistance is needed, contact technical resource when ordering new hoses. Hoses should include an integral bond wire, and, if applicable, hose material should be specific for Gasoline/MTBE/Ethanol compatible service.

6.15.4 - Hydrostatic Test

Follow the hydrostatic inspection procedure in Appendix 6.19.8.

When performing a hydrostatic test, be sure to :

- use the appropriate pressure, and
- test the hose up to, but not over, the designated test pressure.

The test's purpose is to determine the hose's reliability, not to weaken the structure by subjecting the hose to excessive pressure.

Consider replacing hoses in lieu of hydrotesting if more economical and time efficient. If hydrotest must be performed, also consider using contractor to test hoses offsite.

Also, be sure to:

- test hose according to the hose testing schedule or whenever visual inspection reveals questionable defects
- make provisions, before hose pressure tests, to prevent possible property damage and to ensure the safety of personnel performing the tests, and
- ensure only trained personnel using the proper tools and procedures conduct pressure tests.

6.16 - Emergency Planning

It is essential to develop well-defined emergency plans (e.g., to control fire; spills; natural disasters; transportation emergencies; civil disturbances such as vandalism or bomb threats; and mechanical, utility or human failures).

Jurisdictional agencies that will respond to the emergency may review the plans. Secure agreement and develop a protocol for periodic review, updating, training and testing of plans to ensure their reliability.

Some emergency plans are required by regulatory agencies, e.g., SPCC (Spill Prevention Control and Countermeasure) plans, ICP (Integrated Contingency Plan), and Facility Response Plans, by government environmental agencies and dock emergency plans by the U.S. Coast Guard. Region support resources will assist with these plans.

6.16.1 - Planning

Detailed planning is essential to cope with fire or spill emergencies. Consider the safety of people who might be in the terminal when an emergency occurs and also exposures to nearby properties.

Protecting lives and avoiding injuries are the most important elements of an emergency plan. Also consider these issues:


- containing damage
- notification of regulatory agencies
- contamination of water supply
- communication channels (warning and evacuation)
- water supply for fire fighting
- supplies of fire-extinguishing agents
- fire-fighting equipment and manpower
- methods of pollution control, containment and clean-up
- rescue procedures and equipment
- first-aid training and supplies
- traffic control,
- methods to fight fire (put it out) or contain fire (let it burn out) and
- public relations.

Review plans with appropriate emergency services during development, and review at least annually after implementing plans. A plot plan is required, and should include facility details such as:

- types of tanks and contents
- diking or drainage systems
- location of hydrants and other water supplies
- locations of extinguishing agents
- evacuation routes, and
- muster or meeting point outside terminal to take a head count.

6.16.2 - Communications

Prearranged communication channels are of utmost importance in dealing with terminal emergencies. Review the communication plan periodically to keep it up to date. The plan must:

- include a list of emergency telephone numbers of company resources and outside resources such as the fire department, police, hospital, ambulance, etc.
-  Include numbers of pipeline pump stations, if appropriate.
- identify oil spill cleanup cooperatives or contractors, list their phone numbers and have necessary equipment ready for specific anticipated emergencies, and
- contain a priority call list.



Provide for alternate communication procedures, such as outside phones or radio in case the normal system fails.

Only properly qualified personnel should respond to media inquiries.

6.16.3 - Resources

Adequate resources, such as water supply for fires, are essential when responding to an emergency. Plans should outline procedures for obtaining the necessary resources from contractors, the Crisis Management Team, and local municipalities.

6.16.4 - Fire Extinguishers

All fire extinguishers must be visually inspected on a monthly basis to make sure they are ready to operate. The extinguisher tag must be marked (i.e. initial or hole punch) to document the inspection.

Terminal fire extinguishers must be inspected and certified annually by a competent, qualified person.

For more details, refer to Section 2 of this manual and Section 2.6 of the Motiva CM&D HSE Procedural Manual.

6.16.5 - Fire Hydrants

Annually inspect the serviceability of the terminal's fixed fire hydrant system by flushing to check equipment and possible water pressure problems. See Section 2.5.5 of this

manual and Section 2.6.8 of the Motiva CM&D HSE Procedural Manual for additional information on inspecting fixed fire extinguishing systems.

6.16.6 - Fire Foam Systems

Cooperative groups in areas with several product terminals may find it advantageous to have accessible supplies of foam concentrate. Foam suppliers also maintain quantities of foam concentrate at strategic locations throughout the country. If the terminal does not maintain a supply, the nearest source for this material should be identified ahead of time.



Generally, fire foam is not recommended unless required by local regulations.

Refer to the Company Health & Safety Manual for inspection frequency and procedures.

6.16.7 - Employee Training and Practice Drills

Provide training in emergency recognition and prevention awareness. Plans must include provisions for evacuation drills to safe distances and places of refuge. Practice drills tend to reduce panic in an actual emergency.

Walk-through practice sessions for all procedures will familiarize all employees with the details of emergency procedures and may reveal the need for improvements. Provide for a critique of drills to make appropriate revisions.

All terminals must hold tabletop drills once or twice a year, in which employees answer "what if" questions and demonstrate their knowledge of immediate remedial actions (who to call for help, notification and reports to make, etc.).

One or two terminals in each Region must hold annual realistic "wet drills," in which participants actually go through simulated response activities. The Region Office and involved Head Office departments should authorize and plan wet drills

6.16.8 - Emergency Service Organizations

Coping successfully with a terminal emergency requires good relationships with municipal, county and state emergency service agencies. Invite representatives of emergency service organizations to tour the terminal to become familiar with terminal operations and procedures. Understand capabilities and limitations of agencies and formulate plans accordingly.

6.16.9 - Police

Coordinate crowd control in cooperation with police. Make provisions for site security and control, evacuation routes and procedures for severe emergencies.

6.16.10 - Media Relations

The company's emergency media relations policy recognizes the news media's legitimate interest in emergency situations. Cooperating with the news media benefits the company. Such cooperation promotes rapid, accurate reporting of the facts, dispelling rumors and exaggerated accounts often occurring in the confusion of an emergency. Refer to Section 1 – Administration for specifics of who to contact. Terminal management should contact appropriate public affairs representative when an emergency involves any of these conditions:

- fatalities or serious injuries
- potential for significant environmental damage
- evacuation of employees (or possibility of evacuation)
- substantial property damage
- involvement of news media, or a situation likely to attract media attention
- public inconvenience due to the emergency
- charges of company negligence, and
- need for Public Affairs support.

6.17 - Aviation Facilities

Aviation facilities have significant handling procedures and requirements. See Section 9 for details on all requirements.

6.18 - ETOH Blending Considerations

Ethanol blending at the rack has become a common practice in our terminals for many reasons. It has been mandated in some states, in other locations it has become optimal as a replacement for MTBE in RFG gasoline, and in some states it just makes sense economically. The introduction of ethanol blending has revealed many specialized concerns that must be taken into consideration. Outlined below are the general issues to be addressed.

6.18.1 – Rack Equipment

Rack blending for ETOH requires specialized blend skids to be placed at the rack. Generally, rack blending requires at least one blend skid per lane and each skid can handle up to 4 loading arms. Motiva's preference has been Enraf vertical side stream skids. It has been preferred to have skids controlled by TopTech Multiload and TopTech terminal automation system, however they can also be controlled by rack presets or by dedicated PLCs. Some other considerations for the skids are as follows:

- Use of hydraulic control valves on the skids is preferential to electronic or pneumatic, due to the quickness of operation of the hydraulic control valves.
- Must ensure that V-Ball valves are used to control ETOH flow on skids, since they operate more linearly, i.e. 33% open allows roughly 33% flow.
- Must utilize Tuthill 2" PD gear meters w/ Ryton gears on the skid for proper material compatibility. Tuthill meters allow for better measurement at low flow rates than alternative meters and can be installed in any orientation
- In some cases sulfate or other precipitates have developed on rack turbine meter blades. This will cause the rack turbine meters to read incorrectly and will make them difficult to calibrate. If this kind of problem arises, meters should be changed out to Smith Prime 4's, which are not affected by the precipitate.

In some terminals, spool pieces have been placed immediately after the ETOH injection point. This has been done to make it easier to potentially install static mixers in the future if it is deemed optimal in order to maximize the product growth that occurs before the custody transfer meter. Testing is currently underway to determine the value of the static mixers. Currently, the distance has been set as no less than 15 feet from injection point to custody transfer meter, in order to allow at least 1 second of ETOH/gasoline growth before meter. However, if a greater distance is feasible based on rack set-up, then the injection point will be set as far from the meter as possible. Note, proper temperature measurement, meter maintenance, and stock controls are necessary to be able to identify and track the growth.

6.18.2 – Piping

The main consideration for ETOH piping at the terminal is stress corrosion cracking (SCC) around the welds. In the following cases, ETOH piping must be Post Weld Heat Treated (PWHT):

- Significant lengths of new ETOH piping
- Any new or existing ETOH piping over the water
- Any new or existing ETOH piping underground
- Any new or existing ETOH piping off site
- Any new or existing ETOH piping in other high risk areas

Other options to PWHT are available based on specific conditions. Examples include internal linings, alternates to carbon steel pipe, etc. Please consult w/ a technical representative to discuss alternatives and for further guidance on the procedure for PWHT.

Also, all lines in ETOH service must be well supported to minimize SCC.

6.18.3 – Pumps

When upgrading a terminal for ETOH service, Variable Frequency Drives (VFDs) have been installed on RBOB and ETOH supply pumps to accurately control the pressures. Motiva has been using Goulds PumpSmart systems. It is important that the ETOH stream be at least 10 psi higher than the RBOB stream (typical gasoline product pressure at the loading rack is 45 to 50 psi) to assure proper and consistent blending occurs. Controlled pressure allows for the following benefits:

- Measurement Performance
- Line Shock Elimination
- Reduction of Operating Costs (through use of minimum operating pressures necessary and the resulting decreased electrical costs)
- Decrease of Wear and Tear on Pump and Motor Parts

Care must be taken to ensure electrical frequency (noise in data/communication lines) is controlled in system by utilizing isolated conduit, shielded cable, separators in cable trays, etc.

Since ETOH becomes a vital aspect to loading gasoline, the need for spare equipment should be thoroughly evaluated

Pump Seals must be made of ETOH and denaturant (typically gasoline) compatible materials. The following materials are recommended: Viton F, Chemrez, or CalRez. Viton breaks down over time in pump seals, but it is softer and thus more forgiving to particles than CalRez or Chemrez. It simplifies spare parts if the seal material is compatible with all products in the terminal so that all parts are interchangeable.

6.18.4 – Tanks

There are many tank considerations necessary when upgrading a terminal for ETOH service. The following are some of the main considerations to be aware of:

- All tank bottoms and approx. 6 ft. up shell (above all appurtenances and welding on the first course) to be coated with ETOH and mogas compatible liner.
- Use aluminum pans if possible. However, when using steel pans for denatured ETOH all welds and heat affected zones (including welds on top of pan not in direct contact with ETOH) must be coated to help prevent stress corrosion cracking.
- Utilize ETOH compatible mechanical shoe seal or other systems as required to meet local regulations.

Please consult with your technical representative to ensure these issues are addressed.

6.18.5 – Fire Protection

Fire fighting systems might need to be upgraded to alcohol resistant materials depending on manufacturer recommendations and percentage of ETOH being blended. Foam type and application rate may vary depending on whether neat ETOH vs. final blended ETOH gasoline will be handled at the rack and in tank. Consult your technical representative to verify the following:

- Nozzle sizes
- Pipe sizes
- Foam storage size
- Mixer/diffuser changes
- Pump upgrades
- Need for fire sensor upgrade

6.18.6 – VRU

When terminals are converted to ETOH service, a few changes are necessary to any existing VRU. Generally, adsorber column pressure control and automatic temperature control for the glycol are added to the VRU. It has also been found beneficial to adjust the glycol temperature to run between 110 – 120 degrees F. If this temperature adjustment is not made, the glycol tends to absorb the ETOH causing dilution and inefficient performance. Another option is to install a dry vacuum pump that does not require glycol at all. This is an expensive option and may not become economically viable until terminals blend ETOH at 15% or more. At terminals where neat ETOH is loaded (i.e. hubs, etc.) all neat ETOH vapors may need to be routed to a VCU to allow proper vapor equipment operation.

6.19 - Appendices

6.19.1 -Storage Tank Monthly In-Service Inspection

TANK INFORMATION					
System Name (RAM/SAP Level 1)			Region		
TANK LOCATION (RAM/SAP Level 2)			TANK NUMBER		DATE
ROOF TYPE			INSPECTOR		
SERVICE or PRODUCT			NOTIFICATIONS REQUIRED <input type="checkbox"/> YES <input type="checkbox"/> NO		
INSPECTIONS					
	Previously Deficient and SAP Notified	Mark if Deficient Yes No		If Deficient (Yes) Send Notification to:	Comments
DIKED AREA AROUND TANK					
• Dike wall damaged or lowered				Local Manager	
• Dike drain valve broken, leaking or inaccessible				Local Manager	
• Hydrocarbon on ground or surface water inside dike				Local Manager	
• Materials stored inside dike that significantly reduce storage capacity or creates a fire hazard. Excessive vegetation that hides a spill or is a fire hazard.				Local Manager	
FOUNDATION AND TANK BOTTOM					
• Tank bottom leaking contents onto the ground				Tank Coordinator	
• Check interstitial space of double bottom for leaking: a) open valve and check for liquid (close valves after inspection) b) if under pressure/vacuum, make sure vacuum gauges are readable and operating as designed (record reading on back of form)				Tank Coordinator	
• Broken concrete foundation or soil loss under tank				Tank Coordinator	
• Tank shell has water against it				Local Manager	
• Bottom extension has significant corrosion or deterioration				Tank Coordinator	
• Bottom extension covered by soil or vegetation				Tank Coordinator	
TANK SHELL					
• Major shell deformation either inward or outward				Tank Coordinator	
• Tank shell leaking hydrocarbon onto the ground				Tank Coordinator	
APPURTENANCES					
• Roof drain or tank valves leaking or broken				Tank Coordinator	
• Tank mixer leaking or disconnected				Local Manager	
• Stairway or platforms unsafe or need repair				Tank Coordinator	
INSULATION					
• Insulation has damaged areas, corrosion showing or not sealed to prevent water intrusion at the top				Tank Coordinator	
TANK ROOF					
• Fixed Roof or External Floating Roof has significant distortion, buckling or holes				Tank Coordinator	
• External Floating Roof has significant hydrocarbons, water, snow or ice				Tank Coordinator	
• External Floating Roof sump plugged or needs cleaning				Local Manager	
• External Floating Roof significantly out of level				Tank Coordinator	

TANK INFORMATION					
System Name (RAM/SAP Level 1)			Region		
TANK LOCATION (RAM/SAP Level 2)			TANK NUMBER		DATE
<ul style="list-style-type: none"> External Floating Roof has significant debris or material on it. 				Local Manager	
<ul style="list-style-type: none"> External Floating Roof seal has significant damage. 				Tank Coordinator	
<ul style="list-style-type: none"> External Floating Roof legs are damaged or pinned in different positions. 				Local Manager	

6.19.2 - Tank Closure Checklist

LOCATION: _____
TANK NUMBER: _____
PREWORK DATE: _____
POSTWORK DATE: _____

EXTERNAL SHELL		Initial	Comments
1. Inspection Repairs Complete (if applicable)			
2. Paint in Good Condition			
3. Tank ID Number Visible 2/4 Sides			
4. Hazard Label Visible 2/4 Sides			
5. Tank Label (Capacity, HI & HI-HI Level etc.) Updated (if applicable)			
6. Product Name Per Terminal Operations Manual			
7. Data Plate (if present) Adequately Secured			
8. Grounding Cable Intact (if applicable)			
9. Isolation and Drain Valves (Positioned & Serviced)			
10. Product Sample Valves and Caps (if present) Removed and Secured			
11. Water Draw Valves Flanged (i.e. not threaded)			
12. Water Draw Valves and Internal Lines in Correct Location (i.e. Low points)			
13. Remove Fire Valves (unless locally required)			
14. Weeping Rivets, Epoxy Applied			
15. Weep Holes (if present) on Nozzle Pad Checked			
16. Over flows / Vents Not Plugged / Covered			
17. Skid Bars in Place, if necessary (prevents vents from being covered by seal)			
18. Foam System Inspected and Repaired			
19. Foam System Connected			
20. Anchor Bolts/Chairs in Place (if applicable)			
21. Stairs in Good Condition Non-skid If Needed			
22. Manways Ready for Closure (B7 Studs and Nuts Used)			
ROOF		Initial	Comments
1. Inspection Repairs Complete (if appl.)			
2. Paint in Good Condition			
3. Change to Free Vents unless PV is Required			
4. PV Vents (if needed) Serviced and Properly Adjusted			
5. Manways Ready for Closure, Both Above and Below (B7 Studs and Nuts used)			
6. Roof Drain not Plugged			
7. Gauge Hatch has Obvious Gauge Point/Notch			

Tank Closure Checklist contd. (pg 2 of 4)

ROOF Contd.	Initial	Comments
8. Inspection Hatches (Closed) → Check quantity		
9. Vent on Cone Roof with Internal Floater		
10. Gauge Hatch Gasket (Screw down lid or equal)		
11. Nonskid (Walk and Gauging Areas) in Good Condition		
12. Handrails in Good Condition		
13. Painter's Hub in Good Condition		
14. Remove Painter's Hook, Certify Rating, or Replace w/ API Painter's Hub		
PIPING	Initial	Comments
1. Inspection Repairs Complete (if applicable)		
2. Paint in Good Condition		
3. Supports are Adequate for Loads		
4. Gaskets Installed		
5. All Openings Plugged		
6. Flanges in Good Condition (B7 Studs and Nuts Used)		
7. Valves are of the Correct Type for Application (eg. Ball vs. Gate)		
8. Valves are in Good Condition		
RELIEF SYSTEM	Initial	Comments
1. PRV tied into a Closed System		
2. Pipe and Fitting Schedules Correct (i.e min sched. 80 for screwed systems)		
3. Valves (Isolation, Thermal, Tank etc.) in Good Conditions		
4. PRV discharge located away from suction		
5. Port / tee for testing PRV without removal installed.		
DIKE AREA	Initial	Comments
1. Dike walls reinstalled or returned to preconstruction height to ensure original capacity		
2. Dike Drain Cleaned for Use		
3. Dike Area Clean and Free of Hazardous Waste		
4. Dike Area regraded to correct project damage		
5. No Tripping Hazards		
6. Construction / project materials removed.		

Tank Closure Checklist contd. (pg 3 of 4)		
INTERNAL		
SHELL & INTERNAL APPURTENANCES	Initial	Comments
1. Inspection Repairs Complete (if appl.)		
2. Cleaned; Ready for Product (No Excess Corrosion/Scale)		
3. Nozzles in Good Condition		
4. Nozzles in Correct Location		
5. Validate that Shipping/Receiving Nozzles are the Correct Size		
6. Adequate Quantity and Type of Nozzles (i.e. mixing nozzle properly installed & marked on tank)		
7. Adequate Design and Size of Diffuser / Suction		
8. Diffuser / Suction Not Plugged		
9. Gauge Float, Cable Guides in Good Conditions		
10. Default Suction Trough installed (if justified, see section 6.3.12)?		
11. Floating Suction (if present) in Good Condition and Chained		
12. Floating Suction Cable - Chain and Target Board in Good Condition		
13. Swing Joint in Good Condition		
14. Gauge Tube is Slotted		
15. Datum Plate for Gauge Tube is Attached to Bottom of Gauge Pole if there is a Separate Water Gauge Pole, Otherwise Attached to Floor (i.e. not to shell)		
16. Validate there is a Gauge Pole Located Over Low Point/Water Sump (if not, evaluate need)		
17. Leg Supports in Good Condition		
18. Leg Settings Correct after changes made		
19. All Legs Pinned at Same Height		
20. No Legs Missing (All in place)		
BOTTOM	Initial	Comments
1. Inspection Repairs Complete (if appl.)		
2. Cleaned; Ready for Product (No Excess Corrosion/Scale)		
3. Cleaned; No leftover equipment, rags etc.		
4. Liner Installed for aviation service or chemicals (Floor and 3' up Shell).		
5. Vortex Breaker Installed		
6. Sump(s) Clean		
7. Sump(s) in Correct Location(s) (i.e. Low points)		
PAN & CONE	Initial	Comments
1. Inspection Repairs Complete (if appl.)		
2. Cleaned; Ready for Product (No Excess Corrosion/Scale)		
3. Cleaned; No leftover equipment, rags etc.		
4. Manways Ready for Closure, Both Above and Below (B7 Studs and Nuts used)		
5. Ladder in Good Condition		
6. Pontoons in Good Condition		
7. Pontoons Plugged		
8. Pontoon weights Recalculated (if stored products changed)		
9. Gauge Float Operational		
10. HI Level Alarm Nozzles (ie. Flanged)		
11. Consider Changing to Cable Suspended Roof		
12. Validate HLT Sump is Installed in Floating Roof		

Tank Closure Checklist contd. (pg 4 of 4)		
INTERNAL/EXTERNAL		
SEALS Etc.	Initial	Comments
1. Inspection Repairs Complete (if appl.)		
2. Primary Seals Inspected		
3. Secondary Seals Inspected		
4. Seals in Good Condition		
5. Adequate Seal Type (eg. Upgrade from wiper to mechanical shoe needed?)		
6. Environmental Agency Validation of Acceptable Seal		
7. IFR Leg settings: HI _____ LO _____		
8. Anti-Rotational Device Not Binding Roof		
9. Roof Ladder and/or Track in Good Condition		
10. Grounding Cable (Shunts)		
INSTRUMENTATION	Initial	Comments
1. Temperature Probe in Correct Location		
2. Thermal Well located near temperature probe		
3. Temperature Probe Installed & Loop Checked		
4. Varec (Auto Gauge System) System Loop Checked (if applicable)		
5. Varec Gauge Mechanical Parts Checked		
6. Electrical Work Complete		
7. Critical levels verified/recalculated. Overflow Height: _____ HLA _____ HHLA _____, Safe Fill Height _____		
8. HI and HI-HI Alarm Point Reset (if needed)		
9. LO-LO Alarm Set Point Recalculated (if applicable) and Reset		
10. Tank Strapping/Recalculation Completed		
11. New Strapping Entered into Electronic Gauging System (Varec)		
12. New Strapping Entered into Terminal Management System (TMS)		
13. If Bottom Replaced→Make Sure Under Tank CP Reference Cells and Monitoring Tubes are installed		
14. Cathodic Protection Turned On		
Post WORK	Initial	Comments
1. Determine if tank requires hydrostatic test at completion of repairs		
2. Notify Environmental Rep. of tank return to service date for any required regulator/agency notification		

6.19.3 - Storage Tank Hydrotest

SECTION 1 – TANK INFORMATION										
System Name (RAM/SAP Level 1)				TANK LOCATION (RAM/SAP Level 2)			Region			
TANK NUMBER			TANK DIMENSIONS		DIAMETER (FEET)		HEIGHT (FEET)			
MAXIMUM DESIGN FILL HEIGHT	FT.	IN.	NOMINAL CAPACITY (BBLS OR GALS)				YEAR CONSTRUCTED			
SECTION 2 – TEST INFORMATION										
<input type="checkbox"/> INITIAL TEST IMMEDIATELY AFTER CONSTRUCTION <input type="checkbox"/> RETEST			REASON FOR TEST							
Begin Test	DATE		TIME		<input type="checkbox"/> AM <input type="checkbox"/> PM		FILL HEIGHT AT GAUGE HATCH (BEGINNING OF TEST)		FT.	IN.
End Test	DATE		TIME		<input type="checkbox"/> AM <input type="checkbox"/> PM		FILL HEIGHT AT GAUGE HATCH (END OF TEST)		FT.	IN.
TEST FLUID					DURATION OF HYDROTEST					
Temperatures	MINIMUM TANK SHELL TEMP.					°F				
	AMBIENT TEMP.					°F		MAX		°F
	TEST FLUID TEMP.			MIN		°F				
SECTION 3 – COMMENTS (Significant of unusual occurrences during hydrotest)										
WITNESS					COMPANY					

Distribution: Tank Coordinator Files OR
Tank Location files
Retention: Life of the tank

6.19.4 - Floating Roof Seal Inspections

Visual Inspection From the Manway Procedure

Use a large mirror to reflect sunlight on the seal, and then observe as much of the seal as possible.

Look for any unusual conditions in the seal or floating roof, and for water or product on the roof.

Make sure falling rust from the tank shell, cone roof is minimal.

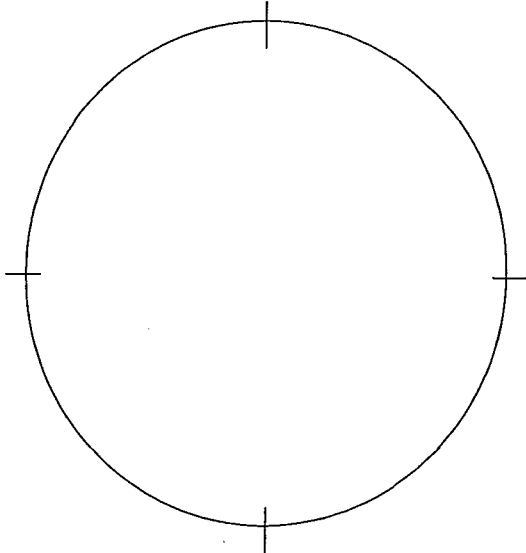
Note any unusual observations (or normal appearance) in the Remarks section at the bottom of the inspection form.

Observe the roof legs to confirm they are set for low roof position. Notify the plant manager if they are set for high roof position.

Document the inspection on the Visual from Manway Inspection Report below. Contact your technical resource for assistance in procedures and documentation, if needed.

Visual From Manway Inspection Report

TANK INFORMATION			
SYSTEM NAME (RAM/SAP Level 1)		REGION	
TANK LOCATION (RAM/SAP Level 2)		TANK NUMBER	DATE
INSPECTED BY			
NEAREST CITY/TOWN			STATE
TANK CONTENTS	LIQUID HEIGHT (FT & IN)	TANK HEIGHT (FT & IN)	TANK DIAMETER (FT & IN)
SEAL INFORMATION			
Check Appropriate Block <input type="checkbox"/> Primary Seal Inspection <u>ONLY</u> <input type="checkbox"/> Secondary Seal Inspection <u>ONLY</u> <i>Enter seal data below only for the seal to be inspected. Enter data for a primary seal <u>or</u> a secondary seal.</i>			
Primary Seal Data Seal Manufacturer _____ Seal Name & Model No. _____ Date Seal Installed _____		Check Appropriate Blocks <input type="checkbox"/> Liquid Mounted <input type="checkbox"/> Vapor Mounted <input type="checkbox"/> Foam Filled <input type="checkbox"/> Liquid Filled <input type="checkbox"/> Metallic Shoe <input type="checkbox"/> Wiper	
Secondary Seal Data Seal Manufacturer _____ Seal Name & Model No. _____ Date Seal Installed _____		Check Appropriate Blocks <input type="checkbox"/> Shoe Mounted <input type="checkbox"/> Rim Mounted	
INSTRUCTIONS: Visually inspect the internal floating roof (IFR) and the roof seal from manway(s) or hatches in the fixed roof.			
1. LEL reading measured at manway.			
2. Time Period since last withdrawal from this tank _____ Hours OR <input type="checkbox"/> More than 24-Hours			
3. Roof legs are pinned in: <input type="checkbox"/> Low Roof Position <input type="checkbox"/> High Roof Position <i>If the legs are in the high roof position, notify location supervisor.</i>			
Supervisor: _____			
Date Notified: _____			
4. Is there any water on the deck of the floating roof? <input type="checkbox"/> No <input type="checkbox"/> Yes <i>If "yes", notify location supervisor.</i>			
Supervisor: _____			
Date Notified: _____			

This form meets the record keeping requirements of inspections performed subsequent to 40 CFR 60 Subpart Kb-113b(a)(2).	
1. Is the floating roof resting on the surface of the liquid?	<input type="checkbox"/> Yes ¹ <input type="checkbox"/> No
2. Is there any product accumulated on the deck?	<input type="checkbox"/> Yes ¹ <input type="checkbox"/> No
3. Is the roof seal detached, i.e. are there obvious gaps where the seal is not pressed against the shell?	<input type="checkbox"/> Yes ¹ <input type="checkbox"/> No
4. Are there holes, tears in the seal fabric?	<input type="checkbox"/> Yes ¹ <input type="checkbox"/> No
If the answer to any of the above questions is "Yes," give the following information:	
Date repairs were made: ²	
Describe repairs made:	
Repairs made by:	
Print name:	
Signature:	
Note 1: Any deficiencies must be reported to the EPA Administrator within 30 days. Note 2: Repair within 45 days or remove the tank from service (a 30-day extension may be requested from the Administrator.)	
Show the seal conditions found on this diagram. The circle represents the tank shell. Roof seal Deficiencies should be shown just inside the tank shell Draw in the following items. With reasonable care, sketch them to scale as far as possible.	
<ul style="list-style-type: none"> ➤ 1. Tank ladder (for Orientation) - L ➤ 2. Manway(s) that were used for this inspection - MW ➤ 3. Location of any liquid on the roof. Label it as water or hydrocarbon. LIQ - W or LIQ - H. ➤ 4. Holes or tears in the seal fabric. - HOLES. ➤ 5. Seal detached away from the tank shell. - DET. 	
COMMENTS	
DISTRIBUTION:	ORIGINAL AT TANK LOCATION COPY TO ENVIRONMENTAL REPRESENTATIVE NOTIFICATION TO ADMINISTRATOR IF NECESSARY
RETENTION:	RETAIN LAST TWO SEAL INSPECTION FORMS AT THE LOCATION

Seal Gap Measurement

November 2008

Terminal Facilities

6-82

Shell/Motiva 0008939

Perform a close visual inspection as described above. Then measure the width and length of any gaps found between the shell and the seal. (Gaps allow emission losses)

Before descending onto the roof, and periodically after descent, ensure respiratory and fire safety by checking for acceptable range of oxygen and LEL.

Contact your technical resource for assistance in procedures and documentation, if needed.

Close Visual Inspection Procedure

Make sure the roof is free of liquid (either product or water).

Walk along the roof as close as possible to the seal (within 3 feet). Observe the seal and inside tank shell for signs of wear.

Periodically pull the seal back from the shell and inspect the seal.

Verify that bonding cables on external floating roofs are '00' welding cable from the roof to the rolling ladder, and from the rolling ladder to the tank shell.

Verify that the floating roof is electrically bonded to the tank shell from shunts around the seal or cables to the roof.

Note any unusual observations (or normal appearance) in the Remarks section at the bottom of the inspection form.

Observe the roof legs to confirm they are set for low roof position. Notify the Plant Manager if they are set for high roof position.

Document the inspection on the Visual from Manway Inspection Report below. Contact your technical resource for assistance in procedures and documentation, if needed.

Close Visual EFR Seal Inspection Report, for Kb – Out of Service Tanks

TANK INFORMATION						
SYSTEM NAME (RAM/SAP Level 1)				REGION		
TANK LOCATION (RAM/SAP Level 2)				TANK NUMBER	DATE	
INSPECTED BY						
NEAREST CITY/TOWN					STATE	
TANK CONTENTS			TANK HEIGHT (FT & IN)	TANK DIAMETER (FT & IN)		
SEAL INFORMATION						
Primary Seal Data			Check Appropriate Blocks			
Seal Manufacturer _____			<input type="checkbox"/> Liquid Mounted		<input type="checkbox"/> Vapor Mounted	
Seal Name and Model No. _____			<input type="checkbox"/> Foam Filled		<input type="checkbox"/> Liquid Filled	
Date Seal Installed _____			<input type="checkbox"/> Metallic Shoe		<input type="checkbox"/> Wiper	
Secondary Seal Data			Check Appropriate Blocks			
Seal Manufacturer _____			<input type="checkbox"/> Shoe Mounted		<input type="checkbox"/> Rim Mounted	
Seal Name and Model No. _____						
Date Seal Installed _____						
Instructions for this form are in the Tank Inspection and Maintenance Manual.						
Completing this form meets the Inspection requirements of 40 CFR 60.113B(B)(6) – Kb (TANK MUST BE EMPTY)	Yes	No	N/A	Condition Good/Poor	List of Repairs Needed ¹	Date Repaired
1. Are there any defects in the external floating roof? (Is the roof badly warped? Are there any holes in the roof?)						
2a. Is the floating roof equipped with a primary seal which is either a mechanical shoe seal or a liquid- mounted seal which completely covers the annular space between the edge of the floating roof and the tank wall.						
2b. Is the floating roof equipped with a secondary seal that completely covers the annular space between the external floating roof and the wall of the storage tank in a continuous fashion.						
3. Are there holes, tears or other openings in the primary seal or seal fabric?						
4. Are there holes, tears or other openings in the secondary seal or seal fabric?						
5. For a non-contact external floating roof, except for automatic bleeder vents and rim space vents, does each opening provide a projection below the liquid surface?						

Completing this form meets the Inspection requirements of 40 CFR 60.113B(B)(6) – Kb (TANK MUST BE EMPTY)	Yes	No	N/A	Condition Good/Poor	List of Repairs Needed ¹	Date Repaired
6. Except for automatic bleeder vents, rim space vents, roof drains and leg sleeves, is each opening in the roof equipped with a gasketed cover, seal or lid that is to be maintained in a closed position at all times (i.e. no visible gaps) except when the device is in use?						
7. Are automatic bleeder vents equipped with a gasket and set to open only when the roof is being floated off or is being landed on the roof leg supports (i.e. set to be closed at all times when the roof is floating)?						
8. Are rim space vents equipped with a gasket and set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting?						
9. Is each emergency roof drain provided with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening?						

Show the seal conditions found on this diagram.
The circle represents the tank shell. Roof seal Deficiencies should be shown just inside the tank shell (circle).

Draw in the following items. With reasonable care, sketch them to scale as far as possible.

- 1. Tank ladder (for orientation) – L
- 2. Manway(s) that were used for this inspection – MW
- 3. Location of any liquid on the roof. Label it as water or hydrocarbon. LIQ – W or LIQ – H
- HOLES 4. Holes or tears in the seal fabric. –
- – DET 5. Seal detached away from the tank shell.

[illegible]

Close Visual IFR Seal Inspection Report, for Kb Pre-Initial Fill or Out of Service Tanks

TANK INFORMATION						
SYSTEM NAME (RAM/SAP Level 1)				REGION		
TANK LOCATION (RAM/SAP Level 2)				TANK NUMBER		DATE
INSPECTED BY						
NEAREST CITY/TOWN					STATE	
TANK CONTENTS			TANK HEIGHT (FT & IN)		TANK DIAMETER (FT & IN)	
SEAL INFORMATION						
Primary Seal Data			Check Appropriate Blocks			
Seal Manufacturer _____			<input type="checkbox"/> Liquid Mounted		<input type="checkbox"/> Vapor Mounted	
Seal Name and Model No. _____			<input type="checkbox"/> Foam Filled		<input type="checkbox"/> Liquid Filled	
Date Seal Installed _____			<input type="checkbox"/> Metallic Shoe		<input type="checkbox"/> Wiper	
Secondary Seal Data			Check Appropriate Blocks			
Seal Manufacturer _____			<input type="checkbox"/> Shoe Mounted		<input type="checkbox"/> Rim Mounted	
Seal Name and Model No. _____						
Date Seal Installed _____						
Instructions for this form are in the Tank Inspection and Maintenance Manual.						
Completing this form meets the inspection requirements of 40 CFR 60.113b(a)(1) and 40 CFR 60.113b(a)(4) – Kb (TANK MUST BE EMPTY)	Yes	No	N/A	Condition Good/Poor	List of Repairs Needed ¹	Date Repaired
1. Are there any defects in the external floating roof? (Is the roof badly warped? Are there any holes in the roof?)						
2a. Is the floating roof equipped with a foam or liquid filled seal mounted in contact with the liquid between the wall of the storage vessel and the floating roof, continuously around the circumference of the tank? OR						
2b. Is the floating roof equipped with two seals, mounted one above the other so each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof? (The lower seal may be vapor-mounted, but both must be continuous.) OR						
2c. Is the floating roof equipped with a mechanical shoe seal which is a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof? A flexible coated fabric spans the annular space between the metal sheet and the floating roof?						
3. Are there holes, tears or other openings in the primary seal or seal fabric?						

*** RESTRICTED ***

Completing this form meets the inspection requirements of 40 CFR 60.113b(a)(1) and 40 CFR 60.113b(a)(4) – Kb (TANK MUST BE EMPTY)	Yes	No	N/A	Condition Good/Poor	List of Repairs Needed ¹	Date Repaired
4. Are there holes, tears or other openings in the secondary seal or seal fabric?						
5a. Is each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, wells, ladder wells, sample wells and stub drains equipped with a cover or lid which is maintained in a closed position at all times except when the device is in use?						
5b. Is the cover or lid equipped with a gasket?						
6. Are covers on each access hatch and automatic gauge float wells bolted except when they are in use?						
7. Are automatic bleeder vents equipped with a gasket and set to open only when the roof is being floated off or is being landed on the roof leg supports (i.e. set to be closed at all times when the roof is floating)?						
8. Are rim space vents equipped with a gasket and set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting?						
9. Each penetration of the internal floating roof for the purpose of sampling is a sample well. Does each sample well have a slit fabric cover that covers at least 90 percent of the opening?						
10. Does each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof have a flexible fabric sleeve or a gasketed sliding cover?						
11. Does each penetration of the internal floating roof that allows for passage of a ladder have a gasketed sliding cover?						

Show the seal conditions found on this diagram. The circle represents the tank shell. Roof seal deficiencies should be shown just inside the tank shell (circle).

Draw in the following items. With reasonable care, sketch them to scale as far as possible. NOTE: The height of a tank course is usually 8 ft and the length of a shell sheet is usually 20 ft.

1. Tank ladder (for orientation) – L
2. Manway(s) that were used for this inspection – MW
3. Location of any liquid on the roof. Label it as water or hydrocarbon. LIQ – W or LIQ – H
4. Holes or tears in the seal fabric. – HOLES
5. Seal detached away from the tank shell. - DET

[illegible]

Operator Inspection Forms

[illegible]

	May				Oct.				
ease tube									
over, clean									
h CRC									
ten all									
in									
ntacts(visual)									
(visual)									
l)									
mechanical Linkage(visual)									
Assembly(visual)									
mechanical Movement of Starter									
Terminations									
rior to cold weather)									
Clean the switch and housing, lubricate with CRC, install desica Pak and date it. Tighten all terminations.									
acts and coil. Check for wear on the mechanical movement of the contactor. Tighten all the conductor terminations, and									
e wire terminations. Check the resistance of the elements with a (VOM) volt on milleamp									
f the heater. Check amperage with an amp probe and record on attached sheet.									
n around the pipe is in good shape. Check the outer covering for breaches and that it is in tact.									
W attage			Heat Trace 2		W attage				
Voltage					Voltage				
A mperage					A mperage				

6.19.7 - Quarterly Visual Hose Inspection Procedure

The following are the steps for conducting a visual hose inspection.

Completely extend the hose and examine for cuts, abrasions, tears and gouges.

Look for surface cracking. Covers may show surface cracking due to prolonged exposure to sunlight/ozone, but such deterioration does not justify retirement unless surface cracks extend to the reinforcement.

Carefully investigate any blistering or saturation of the outside cover (indicating leakage through the hose interior layers). Replace the hose.

Inspect linen and cotton utility hose for mildew, mold, breaks and rotting.

Look for kinking, crushing, permanent distortion or bulges that might indicate that the hose carcass has been damaged. Mark all bulges or soft spots with chalk to examine them more closely under test conditions. If bulges become hard under pressure, retire the hose.

Examine the coupling, flanges and nipples for cracks, excessive corrosion, and indication of leaks or nipple slippage. Cracks, excessive corrosion or any evidence of nipple slippage are reasons for retirement if the fittings cannot be reset.



Structural failures are most common near the end of the hose.

Record the visual inspection.

Repair hose and return to service if cuts or gouges in the cover do not extend into the outer reinforcement.



Replace marine hoses after 10 years of service regardless of the results of visual inspections.

6.19.8 - Hydrostatic Test Pressures and Procedures for Hoses

Hydrostatic Test Pressure

Hose Type	Hose Size	Hydrostatic Test Pressure
Marine	All	150 or 1.5 x MAWP*
All pressure products (truck, transport, tank truck, plant)	1-1/4" to 2"	125#
	2-1/4"	100#
	3"	85#
	4"	85#

*In accordance with local COTP.

Example: if operation allows a maximum of 100 psi operating pressure at the rail, test hoses to 150 psi (100 psi x 1.5).

Test Precautions



Never use air or any other compressible gas as the test medium, because the hose may fail (rupture). Such a failure could result in property damage and serious bodily injury.

The following are test precautions.

- Remove air from the hose by bleeding it through an outlet valve while filling the hose with test medium.
- Restrain the hose before pressure testing by placing steel rods or straps close to each end and at approximate 10-foot (3m) intervals along its length. This procedure keeps the hose from whipping if failure occurs. Anchor steel rods or straps firmly to the test structure, but make sure they do not contact the hose, which must be free to move.
- Secure the outlet end of the hose so that a blown-out fitting will stop.
- Make provisions to protect testing personnel from the forces of the pressure medium if a failure occurs.
- Make sure testing personnel *never* stand in front of or behind the ends of a hose while pressure testing.
- Do not use oil, solvent, gasoline or any other hazardous fluid as a test fluid. Avoiding these fluids protects against fire if a hose fails and the liquid sprays the surrounding area.

Hydrostatic Test Procedure - Hoses

The following are the steps for all hoses requiring hydrostatic testing. Refer to Recommended Testing Procedure in Appendix 6.1.5 on the Marine Terminal Operations Guide.

Connect the hose to a hydrostatic test pump with a pressure rating greater than the hydrostatic pressure.

Fit the opposite end of the hose with a cap or blank flange that has a small air bleeder valve.

Make sure all the connections are tight, and then introduce water (at main pressure) into the hose through the pump end. At the same time elevate the capped end with the vent valve open to bleed off air.

Close the vent valve when the hose is full of water and all the air is out (when a solid stream of water pours from the vent).

Increase the pressure to 60 psi and hold for five minutes. Carefully inspect the hose and couplings or nipples for leaks.

Increase the pressure to the required test pressure and hold for 10 minutes. Check for leaks in the system. (Reference Table in Section 6.19.8 and 6.19.9)

Release the pressure if a coupling leaks. Tighten the couplings if possible, and bring the pressure back to the hose's hydrostatic test maximum. Examine the hose for leaks, especially near the couplings or nipple.



Retire for repair or replacement any length of hose that shows any leakage or defect.

Release pressure from the hose, drain off all liquid and remove test fixtures. Thoroughly eliminate all traces of liquid before returning the hose to service.

Process the test water according to local rules and regulations.

Complete the inspection record, showing test results and disposition of hose.

6.19.9 - Hose Testing Schedule

Hose Testing Schedule						
Hose Type	Visual Inspection (3)			Hydrostatic Test		
	Frequency	Performed By	Record Required	Frequency	Performed By	Record Required
CARGO* - tanker, barge and refueling hoses supplied by dock (all products including steam)	Before and after each use	Operator	No	Annual	Terminal or outside service	Yes (2)
	Quarterly	(1)	Yes			
CARGO* - barge and lake tanker supplied by carrier (all Products)	Before and after each use	Operator	No	Annual		Yes (2)
TANK CAR - pressure (e.g. Butane Propane; Loading and Unloading)	Before and after each use	Operator	No	Annual	Terminal or outside service	Yes (2)
	Quarterly	(1)	Yes			
TANK CAR - suction (e.g. Ethanol; Bottom unloading)	Before and after each use	Operator	No	None Required		
	Quarterly	(1)	Yes			
TANK CAR - gravity (all products)	Before and after each use	Operator	No	None Required		
	Quarterly	(1)	Yes			

*** RESTRICTED ***

TRUCKS - pressure (e.g. refuel trucks)	Daily	Driver	No	Annual	Terminal or outside service	Yes (2)
	Quarterly	Mechanic	Yes			
TRUCKS - gravity (all products)	Before and After each Use	Driver	No	None Required		
	Quarterly	Mechanic	Yes			
TERMINAL - pressure (e.g. hydraulic hoses, portable pump hoses)	Before and after each use	Operator	No	Annual	Terminal or outside service	Yes (2)
	Quarterly	(1)	Yes			
TERMINAL - bottom loading hoses	Quarterly	(1)	Yes	None Required		
TERMINAL - gravity (all products)	Before and after each use	Operator	No	None Required		
	Quarterly	(1)	Yes			
UTILITY - (e.g. fire)	Before and after each use.	(1)	Yes	Annual	Terminal or outside service	Yes (2)

* Refer to the Marine Terminal Operations Guide for information and test procedures.

(1) Qualified Employee or Contractor

(2) Product service, maximum allowable working pressure, date of manufacturer and latest test date to be marked on the hose or documented.

(3) Check marine dock hoses for age stamp and replace after 10 years or sooner if warranted by test or inspection. Replace all product and oily water handling hoses after 10 years of service or sooner, if warranted by test or inspection.

(4) Replace water hose for fire control after 10 years of service unless the hose passes the annual inspection and test, and an outside/contract inspector certifies/approves the hose free of cuts, abrasions, tears, gouges and cracking that do not extend down to the reinforcement.

6.19.10 - Tank Alarm and Fill Level Worksheets

Calculating Tank Alarm and Fill Levels

Refer to Section 6.3.17 for details.

Terminal _____

TANK NUMBER _____

* Prior to completing this form, consider any changes to tank strappings, product type, flow rate, reaction time etc

I. PRELIMINARY DATA

- A. Maximum fill rate (bbls/minute) _____ A
- B. Maximum fill time for receipt to shutdown after an alarm
rings (minutes), typically 4 - 10 min (i.e response time) _____ B
- C. Volume (in bbls) pumped during time "B" (A times B) _____ C
- D. Volume of "C" above with 50% safety factor (1.5 times C) _____ D

II. ALARM AND FILL LEVEL SETTINGS

(Note: **Levels calculated below are product levels.** When installing alarms also take into consideration floater thickness and alarm activation point. Use Installing Tank Alarm worksheet for assistance when installing)

Working Space

OVERFLOW LEVEL OL = _____ bbl
(see strapping chart) = _____ ft _____ in

HIGH-HIGH ALARM SETTING HH = _____ bbl
HH = OL MINUS D (see above) = _____ ft _____ in

HIGH LEVEL ALARM SETTING H = _____ bbl
H = HH MINUS D = _____ ft _____ in

SAFE FILL LEVEL S = _____ bbl
S = H MINUS C (see above) = _____ ft _____ in

"HIGH LEGS" LEVEL HL = _____ bbl
= _____ ft _____ in

"LOW LEGS" LEVEL LL = _____ bbl
= _____ ft _____ in

Notes:

Prepared by: _____ Approved by: _____ Date: _____

Installed/Adjusted by: _____ Verified by: _____ (Terminal Manager) Date: _____

Annual review by: _____ Verified by: _____ (Terminal Manager) Date: _____

Annual review by: _____ Verified by: _____ (Terminal Manager) Date: _____

Annual review by: _____ Verified by: _____ (Terminal Manager) Date: _____

Installing and Verifying Tank Alarms Settings – For Tanks with Pans/IFR/EFR

Plant _____ Tank # _____

Note: This worksheet must be used in conjunction with Calculating Tank Alarm and Fill Level Worksheet.

1) Striking Height SH = ____ ft ____ in

2) When product is high in tank, measure 'E' with tape.
Top of flange on which alarm will be mounted to top of pan E = ____ ft ____ in

3) Measure current product level with gauge tape or side gauge.
Datum plate to product level (incl. water, if any) PL = ____ ft ____ in

4) Height difference between flange that alarm is mounted and gauge hatch F = ____ ft ____ in
(Use best judgment in compensating roof pitch.)

5) Pan height above product level = SH-E-F-PL PH = ____ ft ____ in

Refer to Calculating Tank Alarm and Fill Level Worksheet for OL, HH and H (in ft-in) referenced below.

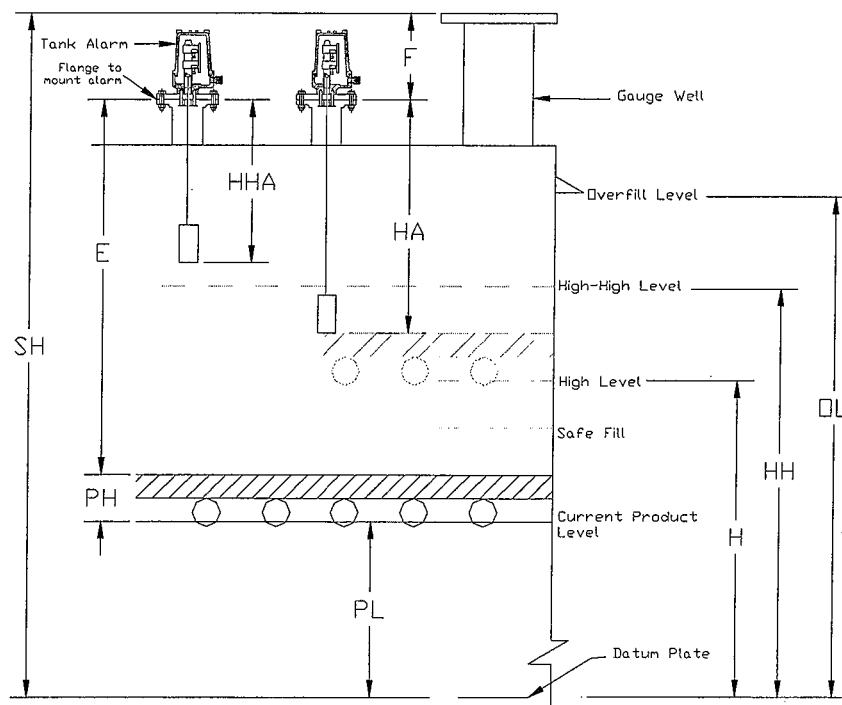
If $PH < (HH - H)$, Set alarm displacers on cable at the distances below.

6) High-High Level Alarm; Distance from alarm flange to bottom of high-high displacer
 $HHA = SH - HH - PH - F$ HHA = ____ ft ____ in

7) High Level Alarm; Distance from alarm flange to bottom of high displacer
 $HA = SH - H - PH - F$ HA = ____ ft ____ in

If $PH > (HH - H)$, in the event a pan sinks, an overfill may occur before an alarm rings. Contact your technical resource for further assistance.

Note: On tanks with one unit (i.e. with both hi and hi-hi displacers) may need to modify the HLA equipment or install a second unit if displacers cannot be physically set as detailed above (i.e. the displacers interfere with each other).



Installing and Verifying Tank Alarms Settings – For Tanks with NO Pans/IFR/EFR

Plant _____ Tank # _____

Note: This worksheet must be used in conjunction with Calculating Tank Alarm and Fill Level Worksheet.

1) Normal Tank Height; Distance from datum plate to top of tank shell TH = ____ ft ____ in

2) Alarm Flange Height: Top of tank shell to top of flange that alarm will be mounted on
(Use best judgment in compensating roof pitch.) G = ____ ft ____ in

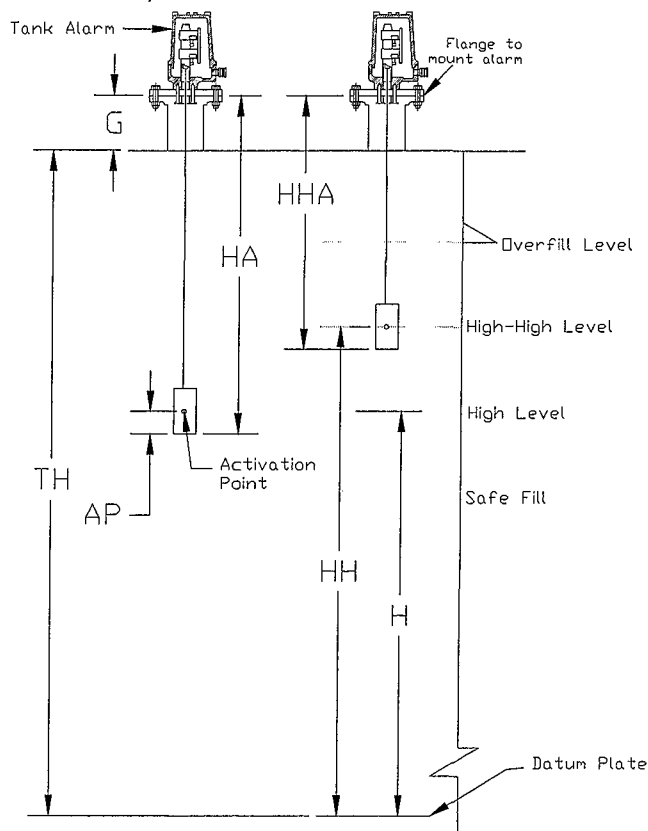
3) Activation Point from bottom of displacer. AP = 0 ft ____ in
See manufacturer's notes for activation point in that specific product.
Typically half the displacer (between 2-4 inches, depending on displacer size)

Refer to Calculating Tank Alarm and Fill Level Worksheet for HH and H (in ft-in) referenced below.

4) High-High Level Alarm; Distance from alarm flange to the bottom of the high-high displacer
HHA = TH+AP+G-HH HHA = ____ ft ____ in

5) High Level Alarm; Distance from alarm flange to bottom of high displacer
HA = TH+AP+G-H HA = ____ ft ____ in

Note: On tanks with one unit (i.e. with both hi and hi-hi displacers) may need to modify the HLA equipment or install a second unit if displacers can not be physically set as described above (i.e. the displacers interfere with each other).



6.19.11 - Alarm Testing Procedure

Typical Test Procedure Performed Within 24 hours Before Every Receipt

1. Notify all remote locations where the alarm will sound (e.g. Pipeline Center, third party security control center) that a high-level alarm system test will soon start.
2. If needed, locate annunciator panel and place in test mode (i.e. to prevent automatic shutdown to occur during testing).
3. Go to the designated receiving tank(s) and activate the high-level by manually pulling cord.
4. Ensure the high level alarm sounds. If applicable, ensure tank MOV is closing.
5. Activate the high-high level by pulling the cord further or pulling the second cord.
6. Ensure the high-high level alarm sounds and that the sound is distinct from the high level alarm. If applicable, ensure tank MOV is closing. Audible alarms should stop when cords are released.
7. If annunciator panel audible alarm is still ringing after cords are released, acknowledge alarm on annunciator panel.
8. Contact all remote locations and confirm they received the alarms.
9. If applicable, take annunciator panel out of test mode before receipt.
10. Document the test was performed. Examples of acceptable documentations are notes and initials in gauge book or product receipt form and automatic annunciator panel print out.

Quarterly High Level Alarm Test Procedure

This test typically needs two operators to perform. Perform all steps listed below in additions to those listed above, quarterly.

After notifying remote locations of testing, if applicable, turn test key on annunciator panel to see if all lights on panel work. (Note: Some locations are wired such that the tank farm audible annunciators and the remote annunciators also sound on this test.)

When high and high-high level cords are pulled, one person should verify the alarm for the appropriate tank was heard and seen on the annunciator panel.

6.19.12 - Alarm Manufacturer's Inspection Procedures

HIGH-LEVEL ALARM SYSTEM INSPECTION OF A TRANSDATA CORP SERIES 6761 LEVEL SWITCH AND SERIES 6699 ANNUNCIATOR SYSTEM.

Maintenance of the 6761 Level Switch

- Inspect the level switch to assure proper operations.
- Inside surfaces of the switch housing and switch mechanisms be clean and free of moisture and dirt to prevent from interfering with the operation of the switch mechanism.
- Cover of the switch assembly should be in place at all times to prevent dirt and foreign matter from entering the housing.
- Check the operation of the switches by pushing the Alnico magnets in towards the stainless steel tube to confirm operation of the magnets and switch assemblies. (In moving these magnets there should be virtually no interference and the magnets should return to their original position upon release.
- It is not recommended that any oil or lubricants be used on the pivot points of the switch mechanism since lower temperature conditions can cause the oil to become thick and prevent operation of the switch mechanism. (The switch assembly is provided with a corrosion inhibitor attached to the upper switch frame.)
- It is recommended that the inhibitor be changed every twelve months.
- It is not recommended that re-adjustments be made to the steel armatures which are installed on the stainless steel connecting rod since these have been set by the factory and tampering will cause failure of the control while in service even though manual operation activates the switches. These armatures have been set and calibrated for the specific gravity of the material being stored.

NOTE: Installation of the Transdata 6693 Level Switch Operation Checker is designed for mounting between the level switch and the tank nozzle in order to manually operate the level switch without having to remove it from the vessel. This affords operating personnel the opportunity of confirming that the level switches are operating properly and can be depended upon to function when the liquid level rises to the level actuating points of the switch.

- It is recommended that at six month and twelve month intervals the inside switch mechanisms of the Series 6761 Limit Switch be sprayed with a dry film Teflon coating which is available from Transdata, which will drive out any moisture that is present in the switch assembly and provide a coating which will help prevent condensate build up on the surfaces of the moving parts.

Maintenance of the 6699 Annunciator System

The annunciator system is of normally energized design which affords constant monitoring of the control relays, field wiring and electrical contacts of the Series 6761 Limit Switches. As a result, in the event of mechanical damage to any of these components an alarm would be initiated indicating a trouble condition, which would alert an operator to any problem.

The annunciator also incorporates a full function test push-button which is designed not only to test all lamp circuits, but will also operate all solid state and electromechanical devices, including local and remote horns.

The annunciator is also provided with a power failure indicating circuit (Model 1554) which is provided with a test button which will simulate a power failure condition in both the annunciator and the field mounted horns.

The field mounted horns are provided with a field wire monitoring circuit (Model 1543) which is designed to constantly monitor the condition of the field horn wiring.

It is recommended that the annunciator system and the power failure indicator test button be actuated on a weekly basis to confirm operation of all circuits.

DECR80318027

Maintenance Instructions Series 6761 Level Switch and Series 6699 Annunciator System

High Level Alarm Inspection Form

Inspection			Maintenance				Completed By
any signs of corrosion	If Visible, Are Contact Points Clean	Are Floats and Chains Operational	Dry Interior	Clean Corrosion	Change Desiccant Pack/Spray with Anti-Corrosion	Grease Cover Threads and Checker Pivot	

6.19.14 - Vapor Recovery/Combustion Unit Shutdown Alarm Response Procedure

If you are responding to the vapor recovery unit shutdown alarm, take the following steps:

Push the "Alarm Reset" to silence the alarm.

Do not attempt to restart the unit unless you are authorized to do so.

Contact a supervisor or terminal operator if available at the terminal.

If unavailable, call in the order listed below:

Name	Office	Home
Supervisor		
Supervisor		
Operator		
Contractor		
Area Technician		
Central Dispatch		Call if contact not made above

Clean air regulations apply to the operation of this unit. Do not perform loading operations while this unit is out of service unless authorized to do so by terminal management.

Maintenance or service on this unit is not to be performed unless the lockout/tagout procedures in effect at this facility are in place.

6.19.15 - Terminal Paint/Identification Guide

Terminal Facilities - Markings

Fire Protection Equipment

Appropriate identification for extinguishers, foam system, water wheels, etc. is required.

Product Piping

At appropriate locations, the following markings are recommended as needs dictate:

- W/3-inch bands, and
- directional flow arrows.

Storage Tanks

The following markings are required for storage tanks:

- appropriate information on product hazards – if locally required
- tank number—12-inch-high numbers
- product stored—6-inch-high letters (unless product changes often)
- near manway cover in 2-inch-high letters: (optional, if kept in tank file)

tank diameter, height and nominal capacity in barrels

date of last internal inspection and cleaning.

- on tank shell—exterior *paint system* (optional if kept in tank file):

date painted

type of surface preparation

paint specification (primer and overcoat), and

contractor.

- on tank shell—interior *coating* (optional if kept in tank file)

date coated

surface preparation

area coated

type of coating and thickness, and

contractor.

- near gauge hatch on roof—"reference gauge height" in feet, inches, and fractions

- on tank shell near side gauge readout *and* near gauge hatch on roof—"safe fill height" in feet, inches, and fractions
- tanks with floating pans (near sight gauge readout)—"floating pan – operational low-level gauge" in feet, inches, fractions, and
- on cone-roof and external floating-roof tanks near manhole—"Entrance into this tank/onto this roof may be done only when observing approved confined space entry procedures."

Terminal Facilities - Color Scheme

Truck Rack

The color schemes for the truck is are (change only when repainting for protection is required):

- Ground level up to canopy underside "cut line" : medium gray
- Canopy underside and piping above "cut line" : white
- Canopy exterior: medium gray

Product Storage Tanks

The color schemes for product storage tanks are:

- light oil/lubricants—white, and
- residual/asphalt—black.

Piping and Equipment

The color schemes for piping and equipment are:

- light oil/lubricants/additive—medium gray or white or match existing color
- residual/asphalt—black
- vapor recovery—white
- fire protection (foam/water) —red
- utilities—medium gray.

Structural and Stair Walkways

The color scheme for walkways is white or medium gray to match existing. Galvanized or aluminum does not need to be repainted. See OSHA Regulations for additional color scheme requirements.

Loading Rack Meters, Manifold, Strategic Block, and Emergency Shut-Down Valves

- Loading rack meters, manifold, strategic block, and emergency shutdown valves must be painted the appropriate product colors.

Plant Facilities - Color Specifications

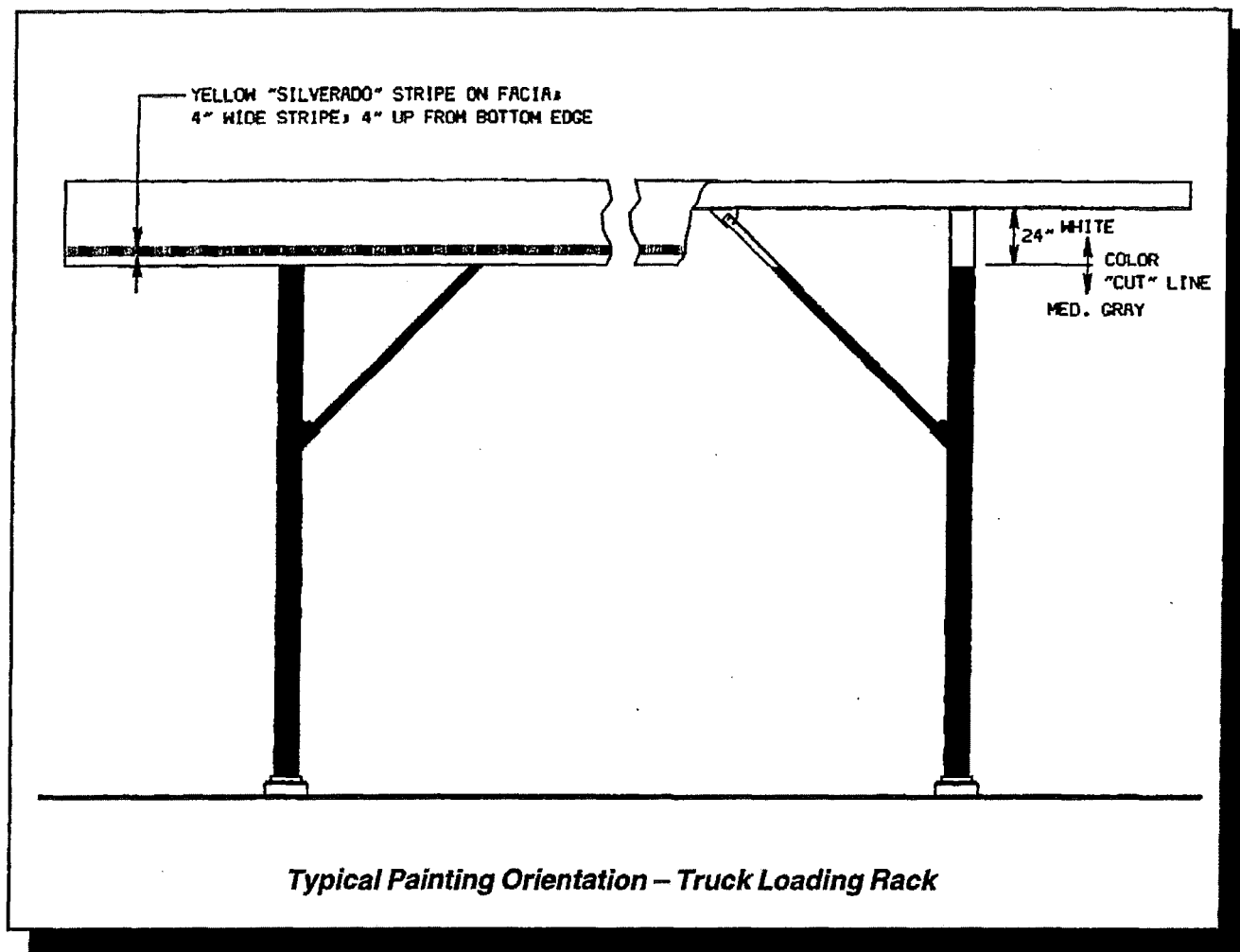
Medium Gray	ANSI #61
White	Tank white
Black	Black
Blue	OSHA blue
Red	OSHA red
Green	OSHA green
Orange	OSHA orange
Yellow	OSHA yellow
Brown	Medium brown

Product Color

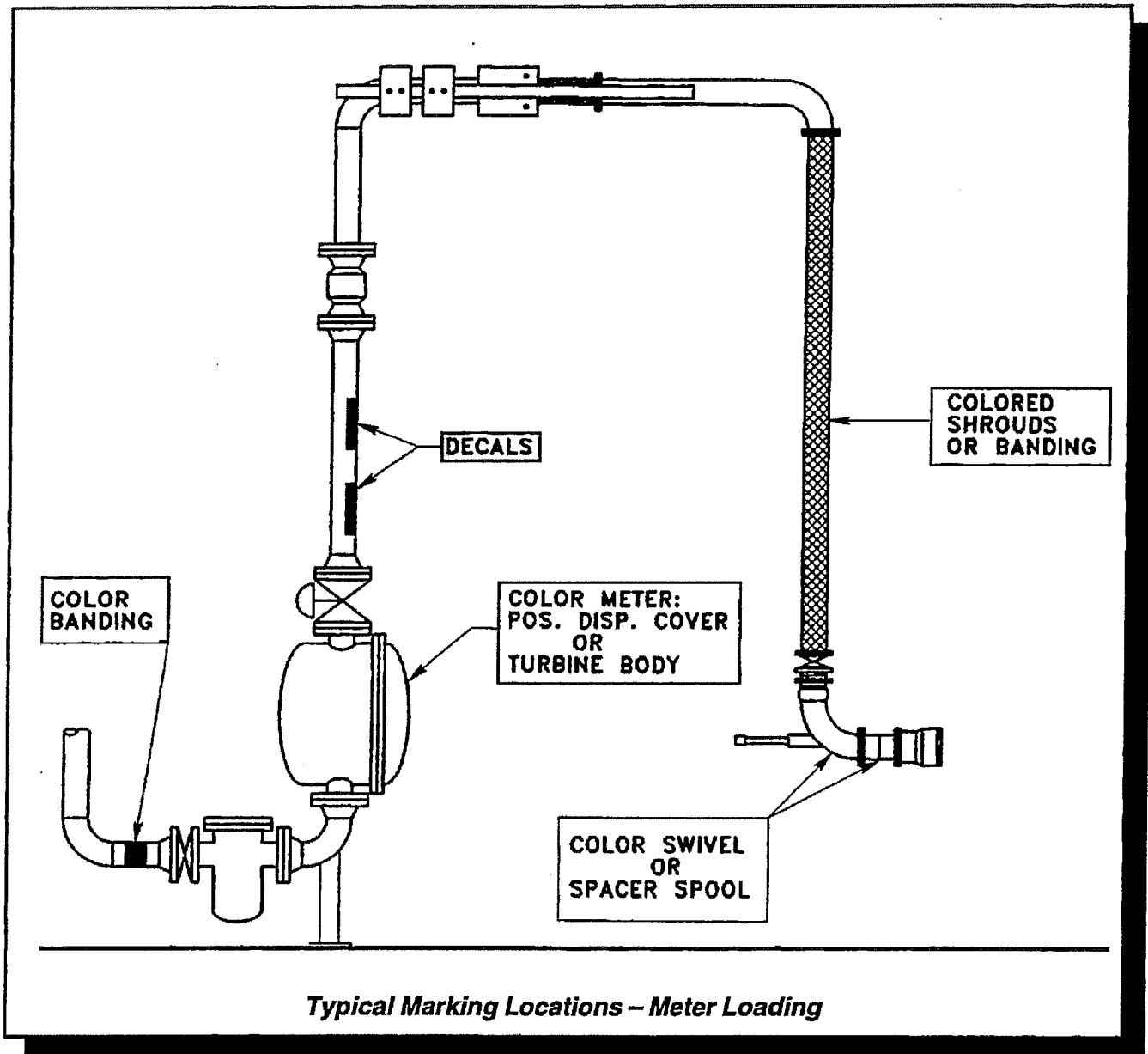
Product	API Color Code
Regular Regular - MTBE Regular - Ethanol	White
Plus Plus - MTBE Plus - Ethanol	Blue
Premium Premium - MTBE Premium - Ethanol	Red
Jet A	Black
Avgas 100LL	Red, White, and Blue
Kerosine	Brown
Diesel	Yellow
#2 Fuel Oil	Green
Vapor Recovery	Orange
Interface Mix (Transmix) Additives	Gray
Ethanol	Bronze

Contact Region management if required.

6.19.16 - Typical Painting Orientation



6.19.17 - Typical Marking Location



6.19.18 - Pipe and Crossing Inspection Form

Use the form that follows to document terminal pipe inspections.

PL-746-A (REV. 1-96)

Pipe And Crossing Report Shell Pipe Line Corporation West Coast Area

LOCATION			
TYPE OF REPORT <input type="checkbox"/> FOREIGN CROSSING <input type="checkbox"/> PIPING CHANGE/MTC <input type="checkbox"/> PIPE EXPOSURE, ONLY	FOREMAN NO. CITY	LOCATION CODE COUNTY	DATE OF OCCURRENCE STATE
SYSTEM CHECK ONE <input type="checkbox"/> CRUDE OIL <input type="checkbox"/> REFINED PRODUCTS <input type="checkbox"/> SYSTEM NAME <input type="checkbox"/> NATURAL GAS <input type="checkbox"/> GATHERING SYSTEM FACILITY NAME/DESCRIPTION			
MAP/DRAWING NO.	SURVEY STATION	AIR-MILE MARKER	
NOMINAL DIA.	WALL THICKNESS OR UT		
CORROSION & COATING INFORMATION - (INFO ON EXISTING PIPE)			
COATING <input type="checkbox"/> BARE <input type="checkbox"/> COATED	COATING TYPE	COATING CONDITION <input type="checkbox"/> DISBONDED <input type="checkbox"/> BRITTLE/CRACKS <input type="checkbox"/> OTHER	<input type="checkbox"/> COLD FLOW/SAGGING <input type="checkbox"/> MECHANICAL DAMAGE <input type="checkbox"/> VISUAL HOLIDAYS <input type="checkbox"/> NO OBVIOUS PROBLEMS
CORROSION PRESENT EXTERNAL <input type="checkbox"/> YES <input type="checkbox"/> NO INTERNAL IF LINE IS CUT <input type="checkbox"/> YES <input type="checkbox"/> NO	CORROSION ACTION <input type="checkbox"/> GENERAL <input type="checkbox"/> LOCALIZED PITTING	LENGTH OF CORRODED AREA	TEST LEADS INSTALLED <input type="checkbox"/> YES <input type="checkbox"/> NO MAX PIT DEPTH
NOTE: SEE INSTRUCTIONS ON THE BACK SIDE OF THIS FORM TO DETERMINE IF FURTHER ACTION IS REQUIRED			
FOREIGN STRUCTURE			
STRUCTURE OWNERSHIP	SIZE	<input type="checkbox"/> OVER SHELL'S LINE <input type="checkbox"/> UNDER SHELL'S LINE	CLEARANCE
TYPE <input type="checkbox"/> POWER <input type="checkbox"/> WATER <input type="checkbox"/> SEWER <input type="checkbox"/> TELEPHONE <input type="checkbox"/> OTHER	STRUCTURE MATERIAL		
CONTRACTOR	ADDRESS		TELEPHONE
PIPING CHANGE - (INFO ON NEW PIPE)			
ADDED/REPLACED LINE OR COMPONENTS <input type="checkbox"/> YES <input type="checkbox"/> NO	REPAIRED LINE <input type="checkbox"/> YES <input type="checkbox"/> NO	TYPE	LOWERED LINE <input type="checkbox"/> YES <input type="checkbox"/> NO
LENGTH	NOMINAL DIA.	WALL THICK	GRADE
COATING TYPE		TYPE	
<input type="checkbox"/> ABOVE GROUND		<input type="checkbox"/> BELOW GROUND	
DEPTH OF COVER (INCHES)			
SKETCH/DESCRIPTION			
REMARKS:			
DAMAGE			
DAMAGE TO	3RD PARTY <input type="checkbox"/> YES <input type="checkbox"/> NO	SHELL SYSTEM <input type="checkbox"/> YES <input type="checkbox"/> NO	SETTLED IN FIELD <input type="checkbox"/> YES <input type="checkbox"/> NO
SIGNATURE	TITLE	TELEPHONE	DATE FORM COMPLETED

WHITE/YELLOW COPIES - HEAD OFFICE

PINK COPY - ORIGINATOR

RETENTION - LIFE OF FACILITY

INSTRUCTIONS			
LOCATION			
This section should be completed for foreign crossings, piping changes or any other time the pipe is exposed. The Facility Name/Description is the location of the work, i.e. mainline, name of pump station/terminal, etc. If needed, Area Office will assign the Area No. The form should be mailed to Head Office within 10 calendar days of occurrence.			
CORROSION & COATING INFORMATION (EXISTING PIPE)			
This section should be completed anytime the pipe is exposed, for any reason. If no external corrosion is present, the corrosion action, length of corroded area, and max pit depth boxes should not be completed.			
Whenever excavations are planned, it is always good practice to inform the Corrosion Technician so that he can be present. A Corrosion Technician may want to complete a Coating & Pipe Evaluation form.			
Coating & Pipe Evaluation Form (PL 671) Completion of a Coating & Pipe Evaluation Form will not always be necessary especially if there is enough documentation that describes the current condition of the coating and the pipeline. Coating and Pipe Evaluation forms should be used for the following:			
<ol style="list-style-type: none"> 1. When the form is new. 2. When there is an interest to gather all available information on certain lines. 3. When something new can be learned about the coating or pipe. 4. When there is not sufficient history on the condition of the line or coating. 5. At locations that are very difficult to evaluate, such as: city streets, pipe with excessive cover, swamp/marsh areas, etc. 6. Where the soil condition may have changed due to chemical or oil spills. 7. On lines that have been removed from coverings. 8. On all pipe where external corrosion is present. 			
General Corrosion and Localized Pitting. To determine if replacement or repair is required due to general corrosion or localized pitting, reference the Pipeline Insp & Mntg Manual, Sects 3.7(C) for liquids & 3.9(C) for gas.			
FOREIGN STRUCTURE			
All boxes in the section should be completed whenever a public road, railroad, buried utility, or foreign utility crosses the line.			
PIPING CHANGE/MAINTENANCE			
This section should be completed when the pipe is lowered, replaced, relocated, repaired, or when pipe/components are added to the system. This form can also be used to document replacement of system components, e. valves, orifiers, etc.			
The following are required when pipe is replaced, relocated, repaired, or when pipe/components are added. (Reference the Pipeline, Corrosion, and Coating Inspection & Maintenance and Safety Manuals for more information)			
Jurisdictional	Non-jurisdictional	Form Required	
Yes Added Pipe, Relocations, & Replacements	Area Determines	PL 318	Hydrostatic Test Certificate with the following documentation: Form PL 318 A, Pressure and Temperature Recording Charts, Deadweight Tester, Pressure Recorder, and Temperature Device Calibration Certificates; Evaluation of Pressure Discontinuities, and if necessary a Profile of the Pipeline when test section pressure differences exceed 100 feet.
No Repairs	Area Determines	PL 779	Weld Non Destructive Testing results (X-Ray film retained for 1 year), Location for storage of X-Ray film shall be Head Office, or NDI Contractor Office.
Yes	Area Determines	PL 779	Results of Inspection Completion Report or Inspection Company's Report
Yes	Area Determines	Visual Inspection Qualification records and NDT Inspector Qualification Records	
Yes	Yes	PL 782	Welder Qualification Records
Yes	Area Determines	PL 568	Internal Inspection of Pipe Removal
SKETCH/DESCRIPTION			
This section should give enough detail, i.e. station numbers, appurtenances, distances, etc., so that revisions to existing drawings can be completed. Remarks, comments, and descriptions of any damage should also be written in this section.			
DAMAGE			
This section should be completed for foreign crossings, piping changes, or any other time the pipe is exposed.			
ALL FORMS SHOULD BE SIGNED WITH TITLE, TELEPHONE NUMBER, AND DATE FORM COMPLETED.			

6.19.19 - Tank Vent Chart

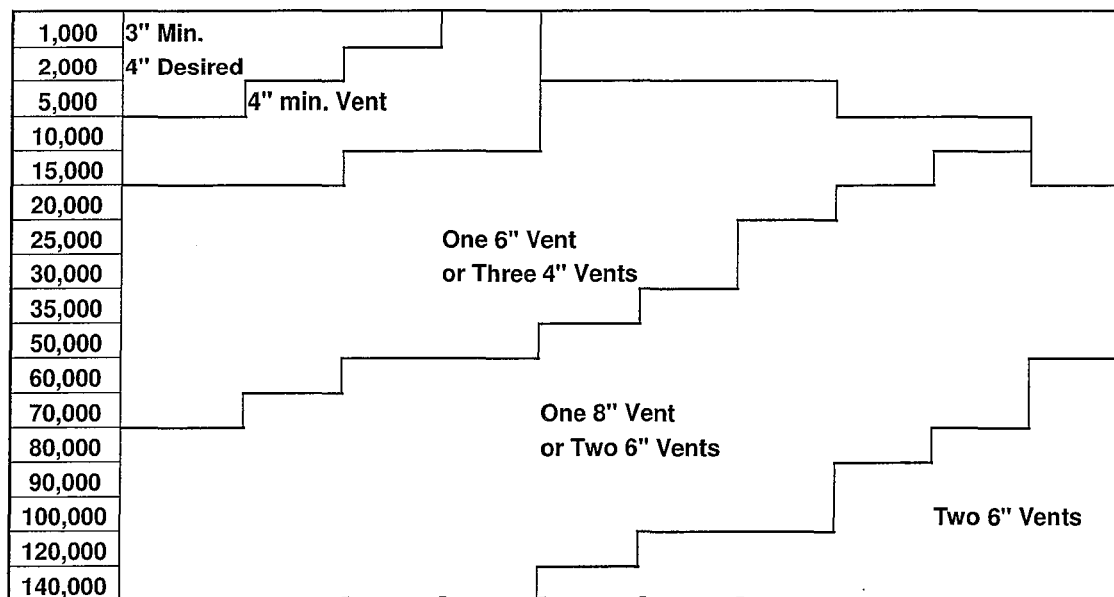
Vent Sizes For Normal Venting of Storage Tanks

Pumping Rate

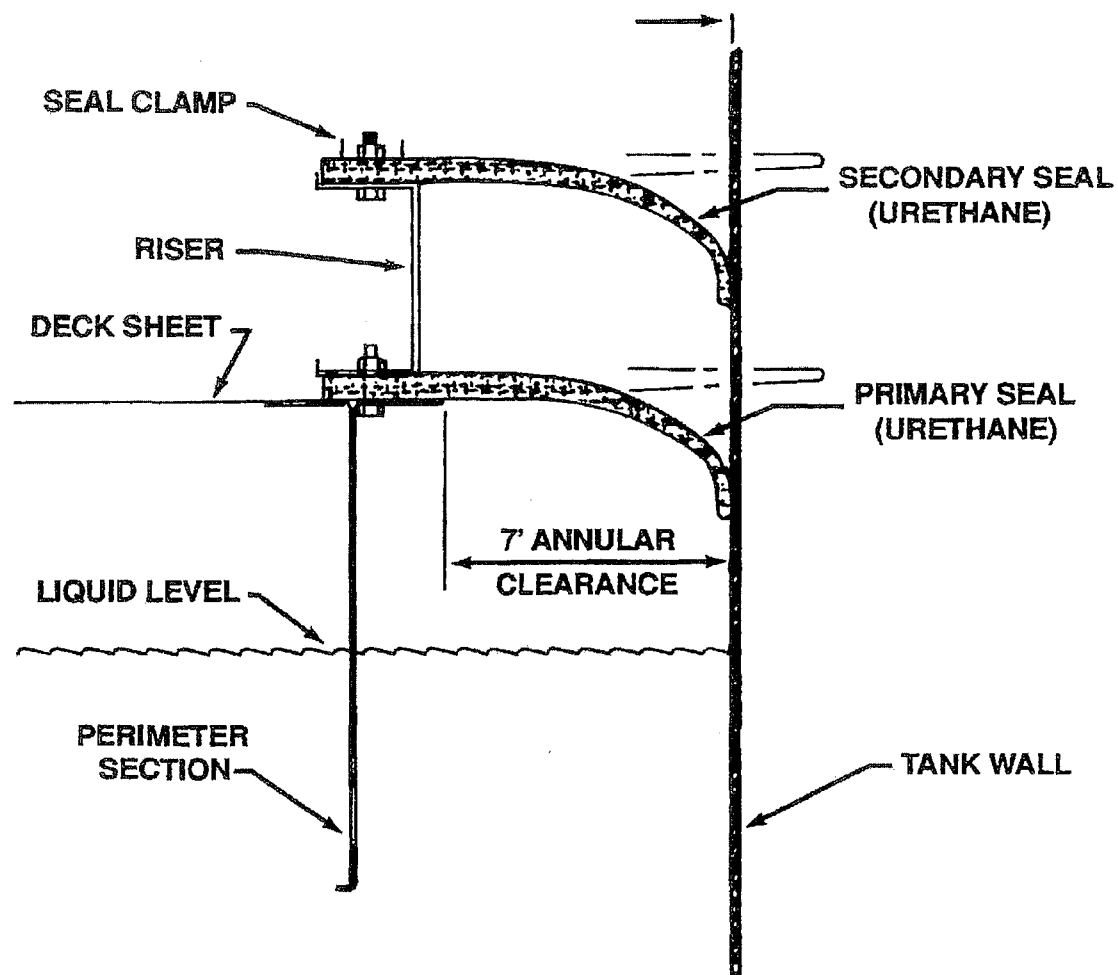
Bbl. Per Hr.	500	1000	1500	2000	3000	4000	5000	6000	7000	8000
Gal. Per Mins.	350	700	1050	1400	2100	2800	3500	4200	4900	5600

Minimum Size Open Vents For Non-Volatile Products (Flash over 100°)

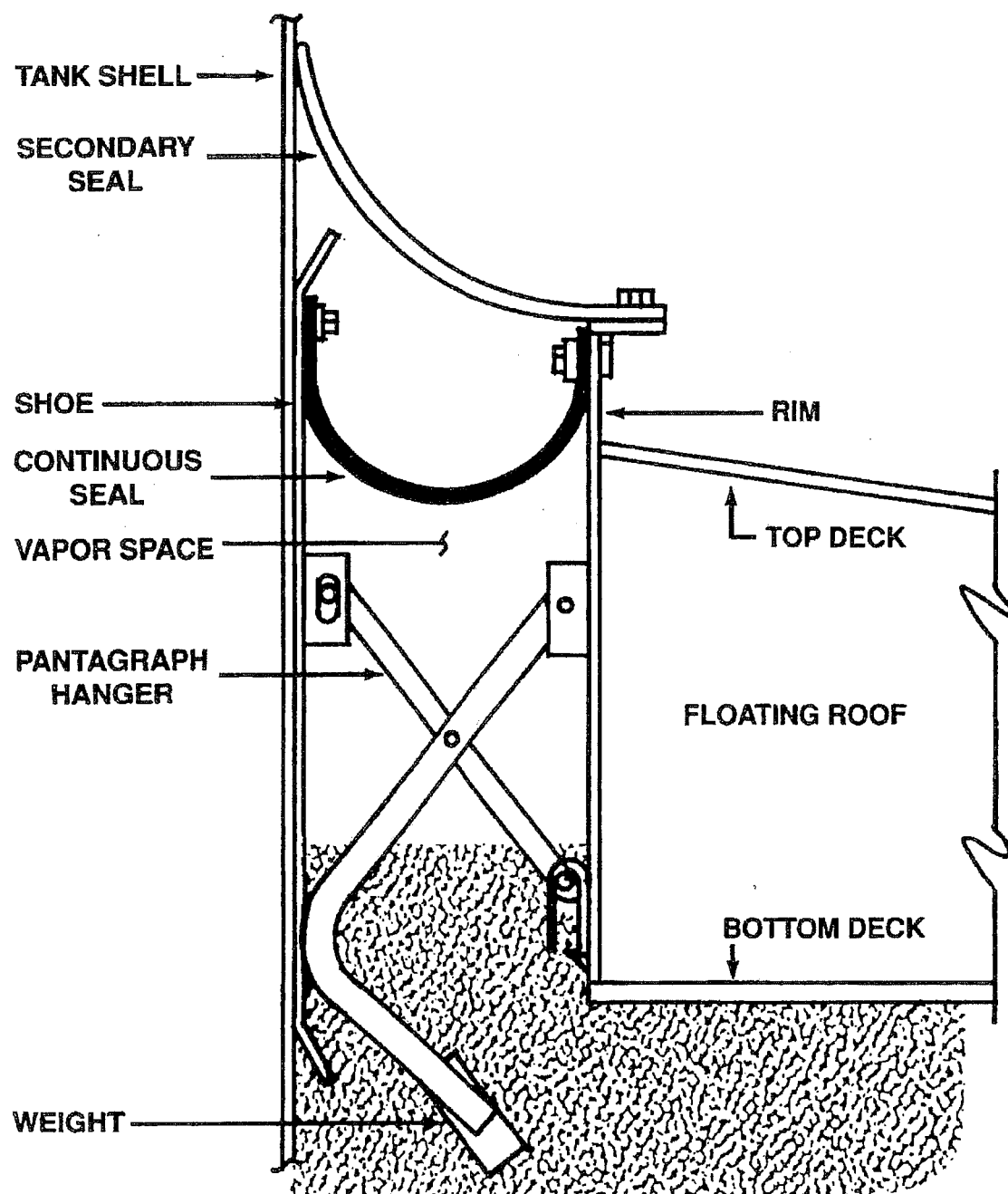
Tank Size (BBL)



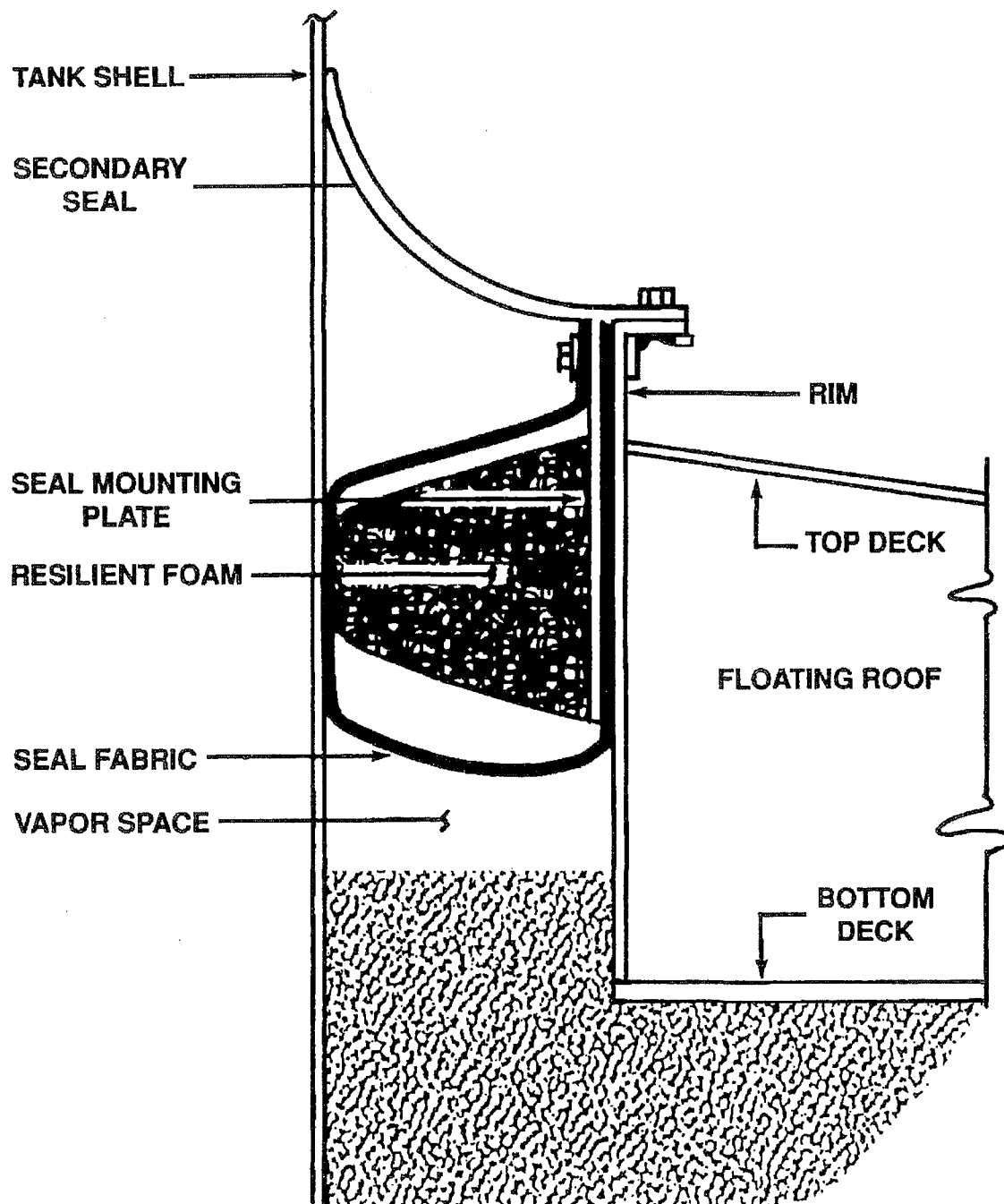
6.19.20 - Double Wiper Seal



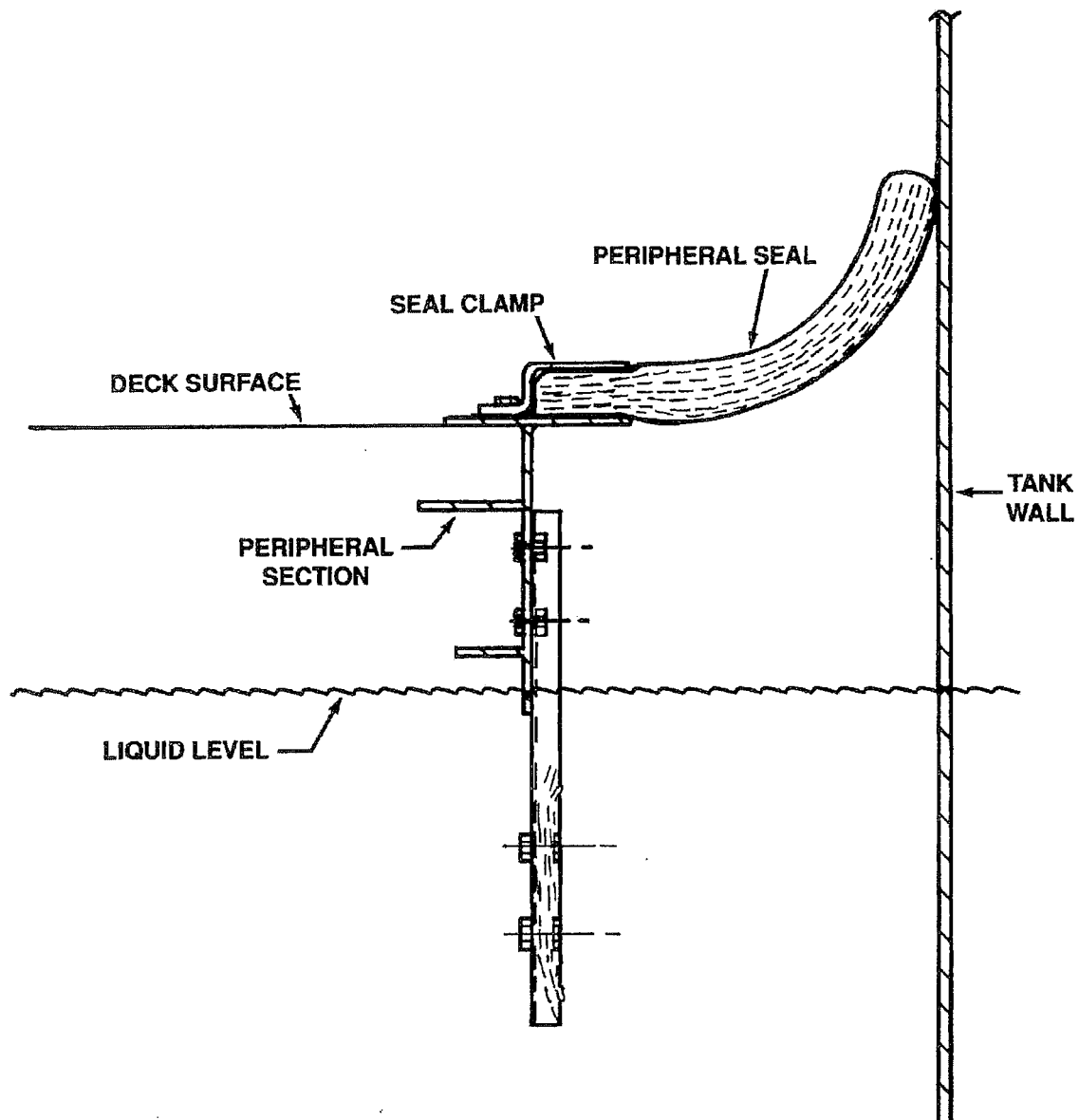
6.19.21 - Typical Metallic Shoe Primary Seal With Rim-Mounted Secondary Seal



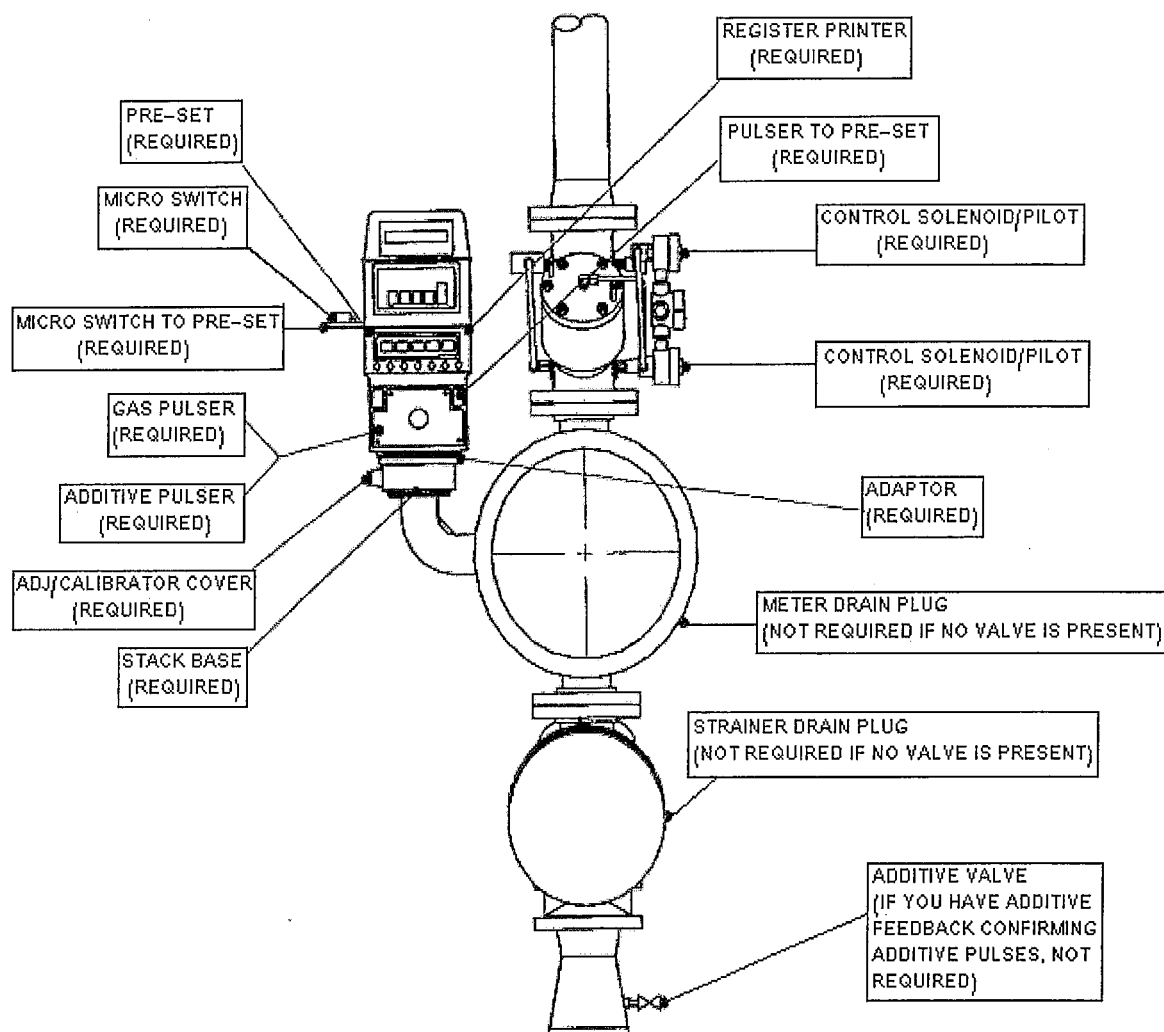
6.19.22 - Typical Nonmetallic Vapor-Mounted Primary Seal With Rim-Mounted Secondary Seal



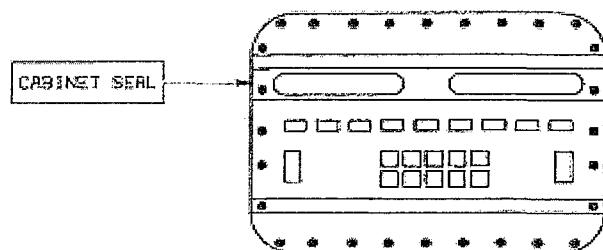
6.19.23 - Flexible-Wiper Primary Seal



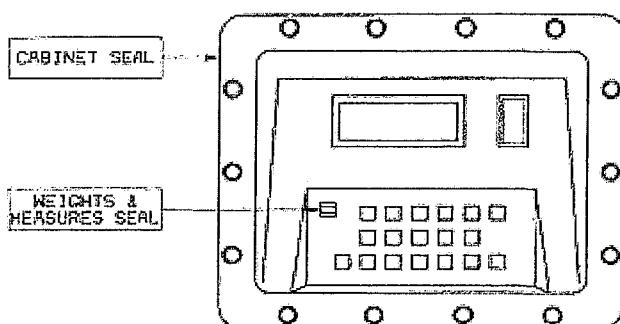
6.19.24 - Minimum Sealing Requirements For a Typical Meter Assembly



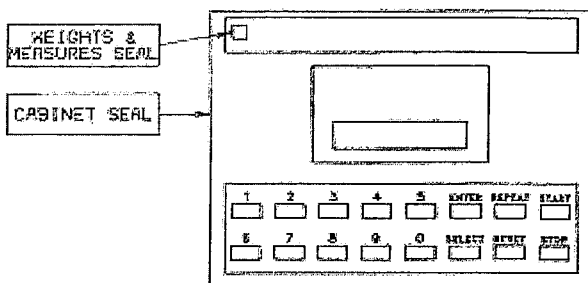
6.19.25 - Minimum Sealing Requirements For Electronic Presets



SMITH
ACCULOAD II

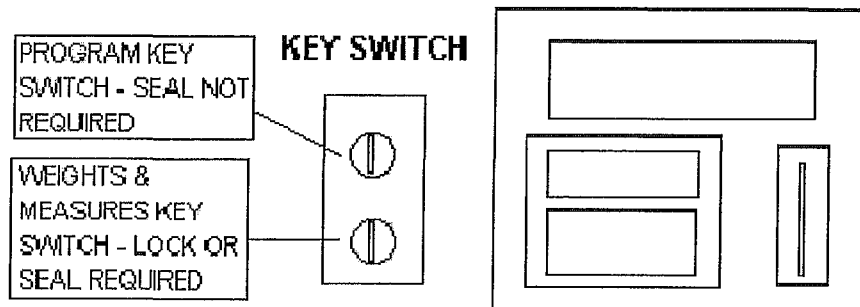


DANIEL
DANLOAD 6000



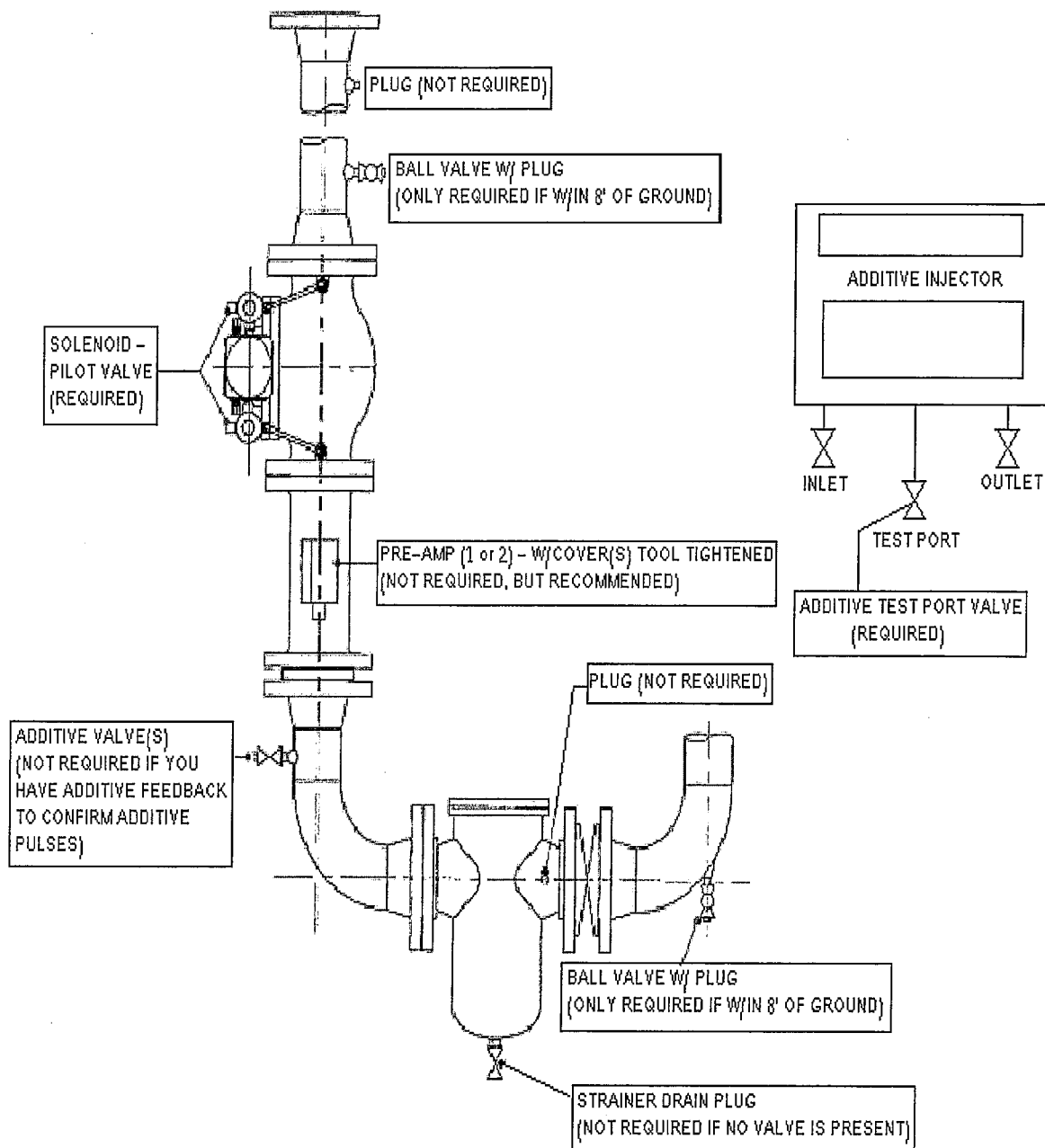
BROOKS
PETROCOUNT
IMS

CARD READER



TOP TECH
SYSTEMS,
MULTILOAD

6.19.26 - Minimum Sealing Requirements For Typical Turbine Meter Riser



6.19.27 – Underground Pipeline Easement & Surface Inspection Form

Person Inspecting:	Date Inspected:
Facility Name:	Pipeline Product Service & Diameter:
Description of Pipeline Location:	
<p>Is there a clear access path along the ground above the line (i.e. free of trees, shrubbery, debris, etc.)? If not, please describe obstacles and their location along line. Action must be taken to make path clear, please indicate intended date of completion.</p>	
<p>Is the location of the underground line marked? Are the markers in good condition? Are all markers present? If not, markers must be replaced/repared. Please indicate action plan and intended date of completion.</p>	
<p>Is there anything that would indicate a pipeline leak (staining/discoloration to the soil, dead grass, etc.) on the ground above the pipeline path? If so, please describe coloring, size, location of staining/dead grass, etc. Cause of symptom(s) must be determined, please consult your Technical and HSSE Reps.</p>	

TANK Description

PRODUCT STORAGE TANK LIST

TANK NO.	PRODUCT IDENTIFICATION	CONST.	NOMINAL CAPACITY (GAL.)	ACTUAL CAPACITY (GAL.)
41	ETHANOL	A/G	90,700	80,500
42	ETHANOL	A/G	90,700	80,500
43	GASOLINE (REGULAR)	A/G	90,700	80,500
44	GASOLINE (REGULAR)	A/G	90,700	80,700
45	ETHANOL	A/G	90,700	80,700
46	ETHANOL	A/G	88,875	78,373
47	GASOLINE (REGULAR)	A/G	425,000	373,755
48	GASOLINE (REGULAR)	A/G	425,000	373,609
49	GASOLINE (SUPER)	A/G	450,000	419,926
50	GASOLINE (SUPER)	A/G	450,000	422,926
51	ADDITIVE (SHELL)	A/G	5,000	4,500
52	ADDITIVE (EXXON)	U/G	5,000	3,600
53	WATER/GASOLINE	A/G	6,000	5,400
54	ADDITIVE (MOBIL)	A/G	5,000	4,500
55	DIESEL	A/G	10,000	9,300
7	OUT OF SERVICE	A/G	12,000	10,200
8	OUT OF SERVICE	A/G	12,000	10,200
9	ADDITIVE (GENERIC)	A/G	12,000	10,200
10	ADDITIVE (SHELL)	A/G	12,000	10,200
16	OIL/WATER SEP.	U/G	6,000	5,400

A/G : ABOVE GROUND

A/U : UNDER GROUND

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(annual sampling report -sci).pdf



**MOTIVA ENTERPRISES LLC TERMINAL
25 PAIDGE AVENUE
BROOKLYN, NEW YORK
NYSDEC SPILL NO. 87-09990**

2010 ANNUAL SAMPLING REPORT

(July 2009 – June 2010)

June 30, 2010

PREPARED FOR:

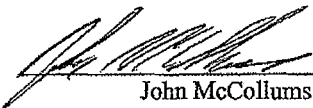
SHELL OIL PRODUCTS US


**Doug Weimer
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PREPARED BY:

SOVEREIGN CONSULTING INC

**290 Executive Dr., Suite 300
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**John McCollums
Engineering Technician**


**Gregory Bosiljcic
Project Manager**

**MOTIVA ENTERPRISES LLC TERMINAL
25 PAIDGE AVENUE
BROOKLYN, NEW YORK
NYSDEC SPILL NO. 87-09990
INCIDENT NO. 97094981**

**2010 ANNUAL SAMPLING REPORT
(July 2009 – June 2010)**

SITE STATUS

The site is an active Terminal and is under a NYSDEC Stipulation Agreement. During the reporting period, the site continues to be in the remediation phase using hand bailing to recover free product on a monthly basis. Groundwater monitoring will continue on an annual basis as will the recovery of free product.

SITE ACTIVITIES

- All monitoring wells not exhibiting separate phase product were sampled on April 15, 2010 consistent with the request made in a NYSDEC letter dated February 13, 2008 and the existing Stipulation Agreement. Each sample was analyzed utilizing EPA Method 8260 for VOCs with the addition of MTBE. Laboratory analysis reports are included in *Appendix A*.
- Gauging of all wells and hand bailing of product was performed on a monthly basis.
- Three additional monitoring wells, MW-42, MW-43 and MW-44 were installed along the buckeye pipeline in the southwest area of the site. Monitoring wells MW-7, MW-21 and MW-22 were abandoned during bulkhead wall installation. They were replaced with new monitoring wells MW-7R, MW-21R and MW-22R. Well construction logs for the newly installed monitoring wells are included in *Appendix B*.
- One 500-gallon AST from the deactivated skimming system was removed from the site in February 2010. Waste disposal documentation is included in *Appendix C*.

GROUNDWATER MONITORING

Number of Wells:	33
Gauging Frequency:	Monthly
Sampling Frequency:	Annually
Recent Sample Dates:	April 15, 2010
BTEX Range:	Below detection limit – 9,266 ug/l (MW-15)
MTBE Range:	Below detection limit – 145 ug/l (MW-20)

PRODUCT RECOVERY

Total Product Recovered: 1,201 gallons (as of May 2010)
Recent Gauging Date: May 3, 2010
Wells Exhibiting Product since July 2009: MW-2, MW-4, MW-26, MW-31, MW-34, MW-36, MW-37, MW-40, and MW-41.

Maximum Product Thickness since July 2009: 1.96 ft (MW-40) (May 3, 2010)

HYDROGEOLOGY

Geology: Geology consists of 12 ft. fine to coarse sand and gravel (fill material), underlain by naturally occurring organic clay and silt (peat)
Depth to Water: 0.6 to 10.5 ft.
Flow Direction: North – Northeast towards Newtown Creek under a gradient of 0.01 ft/ft

CONCLUSIONS AND RECOMMENDATIONS

- Review of historical BTEX and MTBE concentrations in the groundwater beneath the site indicates concentrations have generally decreased over time. Annual sampling of all wells will continue with the next sampling in April-May 2011.
- Based on the product thicknesses and the results of the product bail-down testing results completed in May 2005 (Documented in the 2005 Annual Report), product gauging and hand bailing recovery will continue.

ATTACHMENTS

- Table 1. Current Groundwater Analytical Results Summary.
- Table 2. Historical Groundwater Analytical Results Summary.
- Table 3. Groundwater Elevation Summary (2006-2010).

- Figure 1. Groundwater Contour Map - April 15, 2010.
- Figure 2. Total BTEX/MTBE Concentrations in Groundwater - April 15, 2010.
- Figure 3. LNAPL Thickness Contour Map – April 15, 2010.
- Figure 4. Cumulative Product Recovery Graph.

- Appendix A. April 15, 2010 Groundwater Analysis Laboratory Reports.
- Appendix B. Well Construction Logs.
- Appendix C. Waste Disposal Documentation.

TABLES

Table 1
Current Groundwater Analytical Summary

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)						(ppm)	(°C)
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE	D.O.	Temp.
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >	---	---
MW-01	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	6.12	14.03
MW-02	4/15/2010	NOT SAMPLED (PRODUCT)							
MW-03	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	3.10	13.75
MW-04	4/15/2010	NOT SAMPLED (PRODUCT)							
MW-05	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	1.75	14.47
MW-06	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	6.20	12.66
MW-07R	4/15/2010	16.9	<5.00	<5.00	<5.00	16.9	31.5	2.65	10.31
MW-08	4/15/2010	44.9	<5.00	<5.00	<5.00	44.9	37.6	2.42	10.85
MW-09	4/15/2010	12.5	<5.00	<5.00	<5.00	12.5	15.2	2.89	11.80
MW-13	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	2.31	11.79
MW-14	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	2.93	12.72
MW-15	4/15/2010	839	4,350	556	3,521	9,266	38.8	1.40	15.56
MW-16	4/15/2010	37.6	<5.00	<5.00	5.22	42.82	14.6	1.23	16.68
MW-17	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	5.1	1.66	15.47
MW-18	4/15/2010	36.6	5.08	13.3	16.9	71.88	<5.00	1.88	16.38
MW-19	4/15/2010	11.2	6.34	<5.00	44.9	62.44	5.59	1.50	15.55
MW-20	4/15/2010	497	43.2	20.4	84.9	645.5	145	1.39	15.49
MW-21R	4/15/2010	139	12.2	41.5	54.6	247.3	<5.00	2.41	11.74
MW-22R	4/15/2010	386	68.4	2140	111.2	2705.6	42.8	2.42	11.78
MW-23	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	2.07	13.99
MW-24	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	6.63	2.05	13.75
MW-25	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	1.30	14.77
MW-26	4/15/2010	NOT SAMPLED (PRODUCT)							
MW-27	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	1.91	16.16
MW-28	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	1.58	15.60
MW-29	4/15/2010	122	<5.00	<5.00	<5.00	122	<5.00	2.44	15.08
MW-30	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	1.94	16.17
MW-31	4/15/2010	NOT SAMPLED (PRODUCT)							
MW-32	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	1.70	16.47
MW-33	4/15/2010	223	<5.00	<5.00	<5.00	223	61.9	1.78	14.87
MW-34	4/15/2010	NOT SAMPLED (PRODUCT)							
MW-35	4/15/2010	765	9.78	<5.00	<5.00	774.78	97.4	1.21	15.42
MW-36	4/15/2010	NOT SAMPLED (PRODUCT)							
MW-37	4/15/2010	NOT SAMPLED (PRODUCT)							
MW-38	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	1.68	17.57
MW-39	4/15/2010	65.9	<5.00	<5.00	<5.00	65.9	36.7	1.42	15.09
MW-40	4/15/2010	NOT SAMPLED (PRODUCT)							
MW-41	4/15/2010	NOT SAMPLED (PRODUCT)							
MW-42	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	1.84	13.92
MW-43	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	17.5	1.97	14.91
MW-44	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	1.39	14.63
TW-01	4/15/2010	NOT ACCESSIBLE (FLOODED)							
TW-02	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	1.44	13.62
TW-03	4/15/2010	NOT ACCESSIBLE (FLOODED)							
TW-04	4/15/2010	NOT ACCESSIBLE (FLOODED)							
TW-05	4/15/2010	NOT ACCESSIBLE (FLOODED)							
TW-06	4/15/2010	NOT SAMPLED (PRODUCT)							

Notes:

GW Standard = Values in **bold and italic** exceed the Groundwater Standard.

µg/L = micrograms per liter, or parts per billion (ppb)

<X = Parameter detected below the method limit of quantitation (X).

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >
MW-01	8/14/1989	ND	ND	ND	ND	ND	NA
MW-01	11/14/1989	ND	ND	ND	ND	ND	NA
MW-01	2/13/1990	ND	ND	ND	ND	ND	NA
MW-01	5/4/1990	ND	ND	ND	ND	ND	NA
MW-01	5/8/1991	ND	ND	ND	ND	ND	NA
MW-01	5/13/1992	ND	ND	ND	ND	ND	NA
MW-01	5/12/1993	ND	ND	ND	ND	ND	NA
MW-01	5/10/1994	ND	ND	ND	ND	ND	NA
MW-01	5/22/1995	ND	ND	ND	ND	ND	NA
MW-01	5/23/1996	ND	ND	ND	ND	ND	NA
MW-01	6/18/1997	ND	ND	ND	ND	ND	NA
MW-01	5/29/1998	ND	ND	ND	ND	ND	NA
MW-01	5/11/1999	ND	ND	ND	ND	ND	NA
MW-01	10/27/1999	ND	ND	ND	ND	ND	2
MW-01	6/7/2000	ND	ND	ND	ND	ND	ND
MW-01	5/29/2001	ND	ND	ND	ND	ND	ND
MW-01	5/30/2002	< 1.0	< 1.0	< 1.0	< 5.0	< 8.0	< 1.0
MW-01	6/30/2003	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-01	6/15/2004	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-01	6/7/2005	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-01	6/28/2006	<1.00	<1.00	<1.00	<1.00	<6.00	<1.00
MW-01	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-01	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-01	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-01	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
MW-02	6/8/2005	172	5.5	3.2	16.4	197.1	6.3
MW-02	5/12/2008	NOT SAMPLED (PRODUCT)					
MW-02	4/29/2009	NOT SAMPLED (PRODUCT)					
MW-02	4/15/2010	NOT SAMPLED (PRODUCT)					
MW-03	8/14/1989	ND	ND	ND	ND	ND	NA
MW-03	11/14/1989	ND	ND	ND	ND	ND	NA
MW-03	2/13/1990	ND	ND	ND	ND	ND	NA
MW-03	5/4/1990	ND	ND	ND	ND	ND	NA
MW-03	5/8/1991	ND	ND	ND	ND	ND	NA
MW-03	5/13/1992	ND	ND	ND	ND	ND	NA
MW-03	5/12/1993	ND	ND	ND	ND	ND	NA
MW-03	5/10/1994	ND	ND	ND	ND	ND	NA
MW-03	5/22/1995	ND	ND	ND	ND	ND	NA
MW-03	5/23/1996	ND	ND	ND	ND	ND	NA
MW-03	6/18/1997	ND	ND	ND	ND	ND	NA
MW-03	5/29/1998	ND	ND	ND	ND	ND	NA
MW-03	5/11/1999	ND	ND	ND	ND	ND	NA
MW-03	10/27/1999	ND	ND	ND	ND	ND	1.2
MW-03	6/7/2000	ND	ND	ND	ND	ND	ND
MW-03	5/29/2001	ND	ND	ND	ND	ND	2.1
MW-03	5/30/2002	< 1.0	< 1.0	< 1.0	< 5.0	< 8.0	< 1.0
MW-03	6/30/2003	0.97 ^J	0.70 ^J	<1.0	<1.0	1.67	<1.0
MW-03	6/15/2004	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	<1.0
MW-03	6/7/2005	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	<1.0
MW-03	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-03	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-03	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-03	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-03	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >
MW-04	5/12/1993	1.8	ND	2	12	15.8	NA
MW-04	5/10/1994	ND	ND	ND	ND	ND	NA
MW-04	6/18/1997	ND	ND	0.49	ND	0.49	NA
MW-04	6/30/2003	<2.5	<2.5	<2.5	<2.5	<10	38.8
MW-04	6/15/2004	<1.0	<1.0	<1.0	<1.0	<4.0	24.8
MW-04	6/7/2005	<1.0	<1.0	<1.0	<1.0	<4.0	11.6
MW-04	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-04	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	3.1
MW-04	4/15/2010	NOT SAMPLED (PRODUCT)					
MW-05	8/14/1989	ND	ND	ND	ND	ND	NA
MW-05	11/14/1989	ND	ND	ND	ND	ND	NA
MW-05	2/13/1990	4.6	ND	ND	2	6.6	NA
MW-05	5/4/1990	2.9	ND	ND	ND	2.9	NA
MW-05	5/8/1991	ND	ND	ND	ND	ND	NA
MW-05	5/13/1992	ND	ND	ND	ND	ND	NA
MW-05	5/12/1993	ND	ND	ND	ND	ND	NA
MW-05	5/10/1994	ND	ND	ND	ND	ND	NA
MW-05	5/22/1995	ND	ND	ND	ND	ND	NA
MW-05	5/23/1996	ND	ND	ND	ND	ND	NA
MW-05	6/18/1997	ND	ND	0.29	ND	0.29	NA
MW-05	5/29/1998	ND	ND	ND	ND	ND	NA
MW-05	5/11/1999	ND	ND	ND	ND	ND	NA
MW-05	10/27/1999	ND	ND	ND	ND	ND	228
MW-05	6/7/2000	ND	ND	ND	ND	ND	19.7
MW-05	5/29/2001	ND	ND	ND	ND	ND	18.5
MW-05	5/30/2002	< 1.0	< 1.0	< 1.0	< 5.0	< 8.0	17
MW-05	6/30/2003	<1.0	<1.0	<1.0	<1.0	<4.0	17.1
MW-05	6/15/2004	88.9	10	7.8	32.4	139	38.9
MW-05	6/7/2005	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-05	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-05	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-05	5/12/2008	Not Accessible (Underwater/Flooded)					
MW-05	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-05	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603
25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >
MW-06	8/14/1989	ND	ND	ND	ND	ND	NA
MW-06	11/14/1989	ND	ND	ND	ND	ND	NA
MW-06	2/13/1990	ND	ND	ND	ND	ND	NA
MW-06	5/4/1990	ND	ND	ND	ND	ND	NA
MW-06	5/8/1991	ND	ND	ND	ND	ND	NA
MW-06	5/13/1992	ND	ND	ND	ND	ND	NA
MW-06	5/12/1993	ND	ND	ND	ND	ND	NA
MW-06	5/10/1994	ND	ND	ND	ND	ND	NA
MW-06	5/23/1996	ND	ND	ND	ND	ND	NA
MW-06	5/29/1998	ND	ND	ND	ND	ND	NA
MW-06	5/11/1999	ND	ND	ND	ND	ND	NA
MW-06	10/27/1999	ND	ND	ND	ND	ND	28.7
MW-06	6/7/2000	ND	ND	ND	ND	ND	10.5
MW-06	5/29/2001	ND	ND	ND	ND	ND	ND
MW-06	5/30/2002	< 1.0	< 1.0	< 1.0	< 5.0	< 8.0	< 1.0
MW-06	6/30/2003	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	13.4
MW-06	6/15/2004	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	<1.0
MW-06	6/7/2005	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	<1.0
MW-06	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-06	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-06	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-06	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-06	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
MW-07	8/14/1989	ND	ND	ND	ND	ND	NA
MW-07	11/14/1989	ND	ND	ND	ND	ND	NA
MW-07	2/13/1990	ND	ND	ND	ND	ND	NA
MW-07	5/4/1990	ND	ND	ND	ND	ND	NA
MW-07	5/8/1991	ND	ND	ND	ND	ND	NA
MW-07	5/13/1992	ND	ND	ND	ND	ND	NA
MW-07	5/12/1993	ND	ND	ND	ND	ND	NA
MW-07	5/10/1994	ND	ND	ND	ND	ND	NA
MW-07	5/22/1995	ND	ND	ND	ND	ND	NA
MW-07	5/23/1996	ND	ND	ND	ND	ND	NA
MW-07	6/18/1997	ND	ND	ND	ND	ND	NA
MW-07	5/29/1998	ND	ND	ND	ND	ND	NA
MW-07	5/11/1999	ND	ND	ND	ND	ND	NA
MW-07	10/27/1999	ND	ND	ND	ND	ND	1.3
MW-07	6/7/2000	ND	ND	ND	ND	ND	ND
MW-07	5/29/2001	ND	ND	ND	ND	ND	4.0
MW-07	5/30/2002	< 1.0	< 1.0	< 1.0	< 5.0	< 8.0	1.4
MW-07	6/30/2003	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	13.4
MW-07	6/15/2004	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	1.8
MW-07	6/7/2005	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	<1.0
MW-07	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-07	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-07	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-07R	4/15/2010	16.9	<5.00	<5.00	<5.00	16.9	31.5

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >
MW-08	8/14/1989	ND	ND	ND	ND	ND	NA
MW-08	11/14/1989	ND	ND	ND	ND	ND	NA
MW-08	2/13/1990	ND	ND	ND	ND	ND	NA
MW-08	5/4/1990	ND	ND	ND	ND	ND	NA
MW-08	5/8/1991	ND	ND	ND	ND	ND	NA
MW-08	5/13/1992	ND	ND	ND	ND	ND	NA
MW-08	5/12/1993	9.5	ND	ND	ND	9.5	NA
MW-08	5/10/1994	1.7	ND	ND	ND	1.7	NA
MW-08	5/22/1995	ND	ND	ND	ND	ND	NA
MW-08	5/23/1996	ND	ND	ND	ND	ND	NA
MW-08	6/18/1997	ND	ND	ND	ND	ND	NA
MW-08	5/29/1998	ND	ND	ND	ND	ND	NA
MW-08	5/11/1999	ND	ND	ND	ND	ND	NA
MW-08	10/27/1999	ND	ND	ND	ND	ND	3.20
MW-08	6/7/2000	ND	ND	ND	ND	ND	21.0
MW-08	5/29/2001	0.43	ND	ND	ND	0.43	39.0
MW-08	5/30/2002	< 1.0	< 1.0	< 1.0	< 5.0	< 8.0	1.9
MW-08	6/30/2003	18.3	<1.0	<1.0	<1.0	18.3	58.2
MW-08	6/15/2004	1.5	<1.0	<1.0	<1.0	1.5	8.50
MW-08	6/7/2005	<1.0	<1.0	<1.0	<1.0	<4.0	5.80
MW-08	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	5.00
MW-08	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	6.20
MW-08	5/15/2009	2.4	<1.0	<1.0	<1.0	2.4	6.6
MW-08	4/15/2010	44.9	<5.00	<5.00	<5.00	44.9	37.6
MW-09	5/12/1993	ND	ND	ND	ND	ND	NA
MW-09	5/10/1994	ND	ND	ND	ND	ND	NA
MW-09	5/22/1995	ND	ND	ND	ND	ND	NA
MW-09	5/23/1996	ND	ND	ND	ND	ND	NA
MW-09	6/18/1997	ND	ND	ND	ND	ND	NA
MW-09	5/29/1998	ND	ND	ND	ND	ND	NA
MW-09	5/11/1999	ND	ND	ND	ND	ND	NA
MW-09	10/27/1999	ND	ND	ND	ND	ND	6.5
MW-09	6/7/2000	ND	ND	ND	ND	ND	ND
MW-09	5/29/2001	ND	ND	ND	ND	ND	3.3
MW-09	5/30/2002	< 1.0	< 1.0	< 1.0	< 5.0	< 8.0	< 1.0
MW-09	6/30/2003	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	9.2
MW-09	6/15/2004	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	0.79 ^d
MW-09	6/7/2005	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	5.0
MW-09	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-09	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-09	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-09	5/15/2009	<1.0	<1.0	<1.0	<1.0	<4.0	4.7
MW-09	4/15/2010	12.5	<5.00	<5.00	<5.00	12.5	15.2

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >
MW-13	8/14/1989	ND	ND	ND	ND	ND	NA
MW-13	11/14/1989	ND	ND	ND	ND	ND	NA
MW-13	2/13/1990	ND	ND	ND	ND	ND	NA
MW-13	5/4/1990	ND	ND	ND	ND	ND	NA
MW-13	5/8/1991	ND	ND	ND	ND	ND	NA
MW-13	5/13/1992	ND	ND	ND	ND	ND	NA
MW-13	5/12/1993	8.6	ND	ND	ND	8.6	NA
MW-13	5/10/1994	ND	ND	ND	ND	ND	NA
MW-13	5/22/1995	ND	ND	ND	ND	ND	NA
MW-13	6/18/1997	1.4	ND	ND	1.4	2.8	NA
MW-13	5/29/1998	1.2	ND	ND	ND	1.2	NA
MW-13	5/11/1999	ND	ND	ND	ND	ND	NA
MW-13	5/30/2002	< 1.0	< 1.0	< 1.0	< 5.0	< 8.0	7.4
MW-13	6/30/2003	< 1.0	< 1.0	< 1.0	< 1.0	<4.0	<1.0
MW-13	6/15/2004	0.37 ^J	<1.0	<1.0	<1.0	0.37 ^J	1.1
MW-13	6/8/2005	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-13	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-13	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-13	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-13	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-13	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
MW-14	8/14/1989	2.5	1.7	4.4	4.9	13.5	NA
MW-14	11/14/1989	6.7	ND	1	ND	7.7	NA
MW-14	2/13/1990	60	5.4	ND	18	83.4	NA
MW-14	5/4/1990	68	2.3	8.1	7.1	85.5	NA
MW-14	5/8/1991	43	2.6	6.5	7.2	59.3	NA
MW-14	5/13/1992	97	4.8	8.5	12	122.3	NA
MW-14	5/12/1993	45	2.1	4.9	7.8	59.8	NA
MW-14	5/10/1994	57	2.1	2.7	8.3	70.1	NA
MW-14	5/22/1995	33	1.8	1.1	5.9	41.8	NA
MW-14	5/23/1996	25.7	1.6	1.3	6.6	35.2	NA
MW-14	6/18/1997	13.1	1.1	0.98	5.3	20.48	NA
MW-14	5/29/1998	24.6	2	2.2	9.6	38.4	NA
MW-14	5/11/1999	19	ND	0.83	2.2	22.03	NA
MW-14	10/27/1999	24.4	1.3	ND	4.8	30.5	ND
MW-14	6/7/2000	1.5	ND	ND	ND	1.5	ND
MW-14	5/29/2001	16.1	0.67	ND	3.2	19.97	ND
MW-14	5/30/2002	< 1.0	< 1.0	< 1.0	< 5.0	< 8.0	< 1.0
MW-14	6/30/2003	1.9	< 1.0	< 1.0	< 1.0	1.9	<1.0
MW-14	6/15/2004	5.8	<1.0	<1.0	1.3	7	<1.0
MW-14	6/8/2005	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-14	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-14	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-14	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-14	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-14	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue

Brooklyn, New York

NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >
MW-15	5/10/1994	1,200	48	130	130	1,508	NA
MW-15	6/18/1997	1,600	624	686	3,300	6,210	NA
MW-15	5/11/1999	162.0	ND	122	408.0	692	NA
MW-15	10/27/1999	1,360	176	740	2,350	4,626	8,080
MW-15	6/7/2000	1,050	143	584	1,330	3,107	2,120
MW-15	5/29/2001	507	81.3	386	500	1,474	1,430
MW-15	6/30/2003	281	21	158	250	710	52.7
MW-15	6/7/2005	280	18.7	30.6	53.3	383	45.2
MW-15	6/28/2006	361	28.0	22.7	44.9	457	47.3
MW-15	6/26/2007	234	15.6	21.2	48.6	319	54.7
MW-15	5/12/2008	264	19.4	26.2	71.2	381	40.9
MW-15	4/29/2009	165	20.4	13.7	121	320	45.9
MW-15	4/15/2010	839	4,350	556	3,521	9,266	38.8
MW-16	8/14/1989	300	310	43	240	893	NA
MW-16	11/14/1989	ND	ND	ND	ND	ND	NA
MW-16	5/12/1993	73	ND	10	17	100	NA
MW-16	5/10/1994	46	ND	1.6	4.1	51.7	NA
MW-16	6/18/1997	2,470	17,800	3,760	19,900	43,930	NA
MW-16	5/11/1999	1,040	350	469	3,900	5,759	NA
MW-16	6/30/2003	331	47.7	76.4	118	573	335
MW-16	6/15/2004	218	12.1	107	118	455	197
MW-16	6/7/2005	225	7.6	29.2	26.0	288	32.6
MW-16	6/28/2006	52.6	2.88	6.59	8.90	71.0	5.88
MW-16	6/26/2007	99.8	6.20	4.93	17.1	128	34.2
MW-16	5/12/2008	83.8	4.10	2.00	20.7	111	13.4
MW-16	4/29/2009	56.2	5.3	2.2	15.2	78.9	26.7
MW-16	4/15/2010	37.6	<5.00	<5.00	5.22	42.82	14.6
MW-17	8/14/1989	900	2,600	600	3,300	7,400	NA
MW-17	11/14/1989	400	1,200	590	2,700	4,890	NA
MW-17	2/13/1990	410	960	ND	3,100	4,470	NA
MW-17	5/12/1993	290	24	70	130	514	NA
MW-17	5/10/1994	82	10	30	48	170	NA
MW-17	5/29/1998	347	435	797	5,220	6,799	NA
MW-17	5/11/1999	133	42	162	370	707	NA
MW-17	10/27/1999	213	161	615	2,150	3,139	96.4
MW-17	6/7/2000	136	30.7	77.8	229	474	254
MW-17	5/29/2001	70.9	16.5	78.7	170	336	ND
MW-17	5/30/2002	53	7.1	12.9	14	87	13.4
MW-17	6/30/2003	13.9	5.3	3.9	17.2	40	12.5
MW-17	6/15/2004	13	3.1	1.4	8.7	26	6.8
MW-17	6/7/2005	54.3	4.0	1.9	24.7	85	16.1
MW-17	6/28/2006	3.37	<1.00	<1.00	<3.00	3.37	3.59
MW-17	6/26/2007	67.7	4.44	1.54	25.2	98.9	11.8
MW-17	5/12/2008	44.2	3.70	<1.0	27.9	75.8	8.00
MW-17	4/29/2009	30.1	2.8	<1.0	17.2	50.1	4.6
MW-17	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	5.1

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >
MW-18	8/14/1989	1,100	2,500	580	2,900	7,080	NA
MW-18	11/14/1989	680	770	590	2,900	4,940	NA
MW-18	2/13/1990	630	570	ND	3,100	4,300	NA
MW-18	5/4/1990	420	540	420	2,800	4,180	NA
MW-18	5/13/1992	480	78	380	580	1,518	NA
MW-18	5/12/1993	590	400	61	420	1,471	NA
MW-18	5/10/1994	210	20	70	130	430	NA
MW-18	5/22/1995	5,900	19,000	1,600	12,000	38,500	NA
MW-18	5/23/1996	1,520	12,600	2,750	15,200	32,070	NA
MW-18	6/18/1997	794	1,140	2,280	11,200	15,414	NA
MW-18	5/29/1998	1,010	294	2,300	8,140	11,744	NA
MW-18	5/11/1999	501	127	1,690	3,030	5,348	NA
MW-18	10/27/1999	432	95.6	1,190	779	2,497	178
MW-18	6/7/2000	378	85.2	1,240	1,080	2,783	704
MW-18	5/29/2001	184	47	601	279	1,111	79
MW-18	5/30/2002	104	19	424	48.5	595.9	22.8
MW-18	6/30/2003	42.2	11	154	37.5	245	12.8
MW-18	6/15/2004	71.7	10.4	39	19.9	141	14.9
MW-18	6/7/2005	97	7.9	13.2	35.0	153	18.4
MW-18	6/28/2006	31.8	4.84	29.3	15.4	81.3	8.77
MW-18	6/26/2007	83.1	8.33	12.1	25.6	129	12.2
MW-18	5/12/2008	49.8	4.00	7.50	21.9	83.2	3.70
MW-18	4/29/2009	76.9	4.8	7.7	33.4	123	6.6
MW-18	4/15/2010	36.6	5.08	13.3	16.9	71.88	<5.00
MW-19	5/30/2002	165	4.8	3.6	10.3	184	56.9
MW-19	6/30/2003	76.7	9.9	6.5	45.5	139	19.8
MW-19	6/15/2004	179	15.8	6.1	37	238	20.4
MW-19	6/7/2005	194	12.4	8.8	41.3	257	16.8
MW-19	6/28/2006	49.5	2.74	<1.00	9.16	61.4	11.9
MW-19	6/26/2007	114	4.91	2.27	17.7	139	12.0
MW-19	5/12/2008	11.4	<1.0	<1.0	1.60	13.0	4.20
MW-19	4/29/2009	7.5	1.5	<1.0	2.9	11.9	7.7
MW-19	4/15/2010	11.2	6.34	<5.00	44.9	62.44	5.59
MW-20	5/12/1993	410	ND	180	62	652	NA
MW-20	6/30/2003	525	103	34.9	178	841	3,440
MW-20	6/15/2004	443	95.5	48.1	353	940	220
MW-20	6/7/2005	861	25.1	38.9	90.1	1,015	230
MW-20	6/28/2006	1,420	2,260	342	3,730	7,752	341
MW-20	6/26/2007	1,320	263	98.7	1,420	3,102	188
MW-20	5/12/2008	636	19.7	45.4	119	820	105
MW-20	4/29/2009	59.7	2.5	7.3	5.9	75.4	56.6
MW-20	4/15/2010	497	43.2	20.4	84.9	645.5	145

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >
MW-21	5/8/1991	140	6.5	12.0	41	199.5	NA
MW-21	5/13/1992	20	5.6	15.0	54	94.6	NA
MW-21	5/12/1993	66	17	40	160	283	NA
MW-21	5/10/1994	41	12	46	170	269	NA
MW-21	5/22/1995	14	9.1	31	130	184.1	NA
MW-21	6/18/1997	18.4	ND	32.7	122	173.1	NA
MW-21	5/29/1998	3.4	0.68	4.5	15.1	23.68	NA
MW-21	5/11/1999	56.9	10.8	61.5	201	330.2	NA
MW-21	10/27/1999	13.4	ND	11.1	41.6	66.1	275
MW-21	6/7/2000	6.6	1.6	6.6	24.4	39.2	214
MW-21	5/29/2001	5.2	1.4	8.6	25.2	40.4	110
MW-21	5/30/2002	1.6	< 1.0	1.5	5.1	8.2	28.9
MW-21	6/30/2003	10.5	0.66 ^J	3.2	11.4	25	156
MW-21	6/15/2004	1.4	0.36 ^J	0.79 ^J	2.8	5.4	48.4
MW-21	6/8/2005	<1.0	<1.0	<1.0	<1.0	<4.0	65.3
MW-21	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	50.0
MW-21	6/26/2007	7.07	<1.00	5.57	14.6	27.2	10.7
MW-21	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	93.2
MW-21R	4/15/2010	139	12.2	41.5	54.6	247.3	<5.00
MW-22	5/12/1993	2,300	24	620	210	3,154	NA
MW-22	5/10/1994	2,500	49	720	390	3,659	NA
MW-22	6/18/1997	819	ND	375	76.1	1,270	NA
MW-22	5/29/1998	677	19.9	232	41.9	971	NA
MW-22	10/27/1999	650	31.6	323	21.8	1,026	478
MW-22	6/30/2003	646	91.2	1,240	86.4	2,064	19.3
MW-22	6/15/2004	285	23.2	185	16.4	510	34.4
MW-22	6/8/2005	346	24.8	434	12.1	817	29.5
MW-22	6/28/2006	251	38.9	370	31.6	692	22.0
MW-22	6/26/2007	444	38.0	344	23.7	850	13.8
MW-22	5/12/2008	270	20.5	177	18.4	486	19.6
MW-22R	4/15/2010	386	68.4	2140	111.2	2705.6	42.8
MW-23	5/8/1991	3.9	3	1.4	8.2	16.5	NA
MW-23	5/12/1993	42	4.1	ND	4.9	51	NA
MW-23	5/10/1994	26	1.6	ND	3.3	30.9	NA
MW-23	5/22/1995	4.6	1.5	ND	4.5	10.6	NA
MW-23	5/23/1996	9.2	1.7	ND	3.4	14.3	NA
MW-23	6/18/1997	7.8	1.4	0.55	5.1	14.85	NA
MW-23	5/29/1998	11.6	1.8	ND	6.1	19.5	NA
MW-23	5/11/1999	6	0.9	ND	3.7	10.6	NA
MW-23	10/27/1999	9.1	2.1	0.53	6.3	18.03	20.3
MW-23	6/7/2000	8.5	1.9	ND	5.5	15.9	19.3
MW-23	5/29/2001	4.7	0.98	ND	3.3	8.98	38.1
MW-23	5/30/2002	1.7	1.3	< 1.0	2	5.0	21.7
MW-23	6/30/2003	1.4	1.3	<1.0	3.7	6.4	12.9
MW-23	6/15/2004	1.1	1.6	<1.0	3.5	6.2	17.9
MW-23	6/8/2005	<1.0	<1.0	<1.0	1.6	1.6	11.9
MW-23	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	7.05
MW-23	6/26/2007	<1.00	1.27	<1.00	3.10	4.37	5.64
MW-23	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	2.70
MW-23	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	2.8
MW-23	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >
MW-24	5/8/1991	230	180	83	270	763	NA
MW-24	5/13/1992	240	64	200	300	804	NA
MW-24	5/12/1993	31	ND	ND	ND	31	NA
MW-24	5/10/1994	460	16	130	230	836	NA
MW-24	5/22/1995	100	ND	86	7	193	NA
MW-24	5/23/1996	168	3.5	50.3	42.2	264	NA
MW-24	6/18/1997	126	5.7	17.7	169	318.4	NA
MW-24	5/29/1998	54.6	3.6	10.2	61.8	130.2	NA
MW-24	5/11/1999	78.2	2	3.8	10.5	94.5	NA
MW-24	10/27/1999	1.3	ND	ND	1.3	2.6	26.4
MW-24	6/7/2000	24	1.9	3.9	7.3	37.1	234
MW-24	5/29/2001	75.6	12	5.6	37.2	130.4	1,380
MW-24	5/30/2002	< 1.0	< 1.0	< 1.0	4.1	4.1	295
MW-24	6/30/2003	99.9	4.2	11.6	85.9	202	543
MW-24	6/15/2004	7.6	0.67 ^J	<1.0	2.2	9.8	16.2
MW-24	6/8/2005	15.3	1.2	<1.0	2.0	18.5	78.3
MW-24	6/28/2006	27.6	<1.00	<1.00	<3.00	27.6	164
MW-24	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	5.13
MW-24	5/12/2008	144	22.1	28.8	70.3	265	621
MW-24	4/29/2009	11.3	<1.0	<1.0	6.0	17.3	37.1
MW-24	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	6.63
MW-25	5/8/1991	210	4.4	1.9	ND	216.3	NA
MW-25	5/13/1992	28	ND	ND	1.5	29.5	NA
MW-25	5/12/1993	30	ND	ND	3.2	33.2	NA
MW-25	5/10/1994	4.6	ND	ND	1.5	6.1	NA
MW-25	5/22/1995	ND	ND	ND	ND	ND	NA
MW-25	5/23/1996	0.78	ND	ND	ND	0.78	NA
MW-25	6/18/1997	ND	ND	ND	ND	ND	NA
MW-25	5/29/1998	ND	ND	ND	2.9	2.9	NA
MW-25	5/11/1999	ND	ND	ND	ND	ND	NA
MW-25	10/27/1999	ND	ND	ND	1.7	1.7	28.2
MW-25	6/7/2000	ND	ND	ND	ND	ND	74.4
MW-25	5/29/2001	ND	ND	ND	ND	ND	25.8
MW-25	5/30/2002	< 1.0	< 1.0	< 1.0	< 5.0	< 8.0	18
MW-25	6/30/2003	<1.0	<1.0	<1.0	<1.0	<4.0	12.6
MW-25	6/15/2004	<1.0	<1.0	<1.0	<1.0	<4.0	42.9
MW-25	6/7/2005	<1.0	<1.0	<1.0	<1.0	<4.0	13.6
MW-25	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	7.18
MW-25	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	12.5
MW-25	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-25	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	3.8
MW-25	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
MW-26	6/15/2004	53.5	8.3	29.2	37.2	128	18.2
MW-26	6/8/2005	6.6	1.3	1.3	8.6	17.8	3.3
MW-26	5/12/2008	NOT SAMPLED (PRODUCT)					
MW-26	4/29/2009	NOT SAMPLED (PRODUCT)					
MW-26	4/15/2010	NOT SAMPLED (PRODUCT)					

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >
MW-27	5/29/1998	0.92	ND	ND	1.8	2.72	NA
MW-27	5/11/1999	ND	ND	ND	1	1	NA
MW-27	10/27/1999	ND	ND	ND	1.9	1.9	50.1
MW-27	6/7/2000	ND	ND	ND	ND	ND	1.7
MW-27	5/29/2001	ND	ND	ND	ND	ND	23.8
MW-27	5/30/2002	< 1.0	< 1.0	< 1.0	< 5.0	< 8.0	28.3
MW-27	6/30/2003	<1.0	<1.0	<1.0	<1.0	<4.0	13.1
MW-27	6/15/2004	<1.0	<1.0	<1.0	<1.0	<4.0	18.6
MW-27	6/7/2005	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-27	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-27	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	8.86
MW-27	5/12/2008	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-27	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-27	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
MW-28	5/29/1998	ND	ND	ND	1.9	1.9	NA
MW-28	5/11/1999	ND	ND	ND	0.97	0.97	NA
MW-28	10/27/1999	ND	ND	ND	1.4	1.4	13.2
MW-28	6/7/2000	ND	ND	ND	ND	ND	9.5
MW-28	5/29/2001	ND	ND	ND	1.5	1.5	8
MW-28	5/30/2002	< 1.0	< 1.0	< 1.0	1.5	1.5	12.6
MW-28	6/30/2003	1.3	<1.0	<1.0	2.4	3.7	20.4
MW-28	6/15/2004	1.3	0.61 ^d	<1.0	3.8	5.7	23.4
MW-28	6/7/2005	<1.0	<1.0	<1.0	1.7	1.7	10.1
MW-28	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	3.96
MW-28	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	5.75
MW-28	5/12/2008	<1.0	<1.0	<1.0	2.40	2.4	6.40
MW-28	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	3.9
MW-28	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
MW-29	5/29/1998	1,250	17.2	62.9	79.2	1409	NA
MW-29	5/11/1999	651	10.5	33.3	50.1	745	NA
MW-29	10/27/1999	1,060	18.1	40.6	53.6	1172	ND
MW-29	6/7/2000	173	2.8	4.4	5.7	186	ND
MW-29	5/29/2001	267	4.4	6.3	9.2	287	11.7
MW-29	6/30/2003	390	14	45	33	482	7.5
MW-29	6/15/2004	250	10	23.6	30.1	314	3.6
MW-29	6/7/2005	35.6	1.3	4.2	3.8	44.9	<1.0
MW-29	6/28/2006	184	4.36	12.6	15.0	216	<1.00
MW-29	6/26/2007	303	5.46	10.0	26.8	345	<1.00
MW-29	5/12/2008	335	4.60	12.5	22.9	375	1.00
MW-29	4/29/2009	105	1.9	3.9	7.6	118	<1.0
MW-29	4/15/2010	122	<5.00	<5.00	<5.00	122	<5.00
MW-30	6/30/2003	<1.0	<1.0	<1.0	<1.0	<4.0	3.5
MW-30	6/15/2004	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-30	6/7/2005	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-30	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-30	6/26/2007	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
MW-30	5/12/2008	NOT ACCESSIBLE (FLOODED)					
MW-30	4/29/2009	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0
MW-30	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
MW-31	5/12/2008	NOT SAMPLED (PRODUCT)					
MW-31	4/29/2009	NOT SAMPLED (PRODUCT)					
MW-31	4/15/2010	NOT SAMPLED (PRODUCT)					

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	---	< 10 >
MW-32	10/27/1999	21.7	5.4	3.2	19.2	49.5	37
MW-32	5/30/2002	7.2	2.8	1.1	10.9	22	28.6
MW-32	6/30/2003	5.2	2.3	1.8	10.8	20	13.5
MW-32	6/15/2004	3.5	1.4	0.78 ^j	5.6	11.3	18.1
MW-32	6/7/2005	<1.0	<1.0	<1.0	3.0	4.8	4.7
MW-32	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	3.81
MW-32	6/26/2007	1.18	1.02	<1.00	4.16	4.16	4.50
MW-32	5/12/2008	<1.0	<1.0	<1.0	1.00	1.0	2.80
MW-32	4/29/2009	<1.0	<1.0	<1.0	1.6	1.6	3.2
MW-32	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
MW-33	6/15/2004	284	5.7	4.1	16	310	298
MW-33	6/8/2005	212	4.6	9.2	13.2	239	138
MW-33	6/28/2006	148	1.70	4.74	9.17	164	142
MW-33	6/26/2007	240	2.67	<1.00	5.93	249	89.9
MW-33	5/12/2008	72.4	4.30	2.20	10.5	89.4	27.1
MW-33	4/29/2009	13.7	<1.0	<1.0	5.6	19.3	7.8
MW-33	4/15/2010	223	<5.00	<5.00	<5.00	223	61.9
MW-34	6/8/2005	115	3.8	4.4	16.4	140	22.6
MW-34	6/28/2006	83.7	3.14	2.31	7.42	96.6	22.2
MW-34	6/26/2007	73.2	3.41	1.41	10.80	88.8	19.4
MW-34	5/12/2008	NOT SAMPLED (PRODUCT)					
MW-34	4/29/2009	77.5	<1.0	<1.0	4.0	81.5	61.6
MW-34	4/15/2010	NOT SAMPLED (PRODUCT)					
MW-35	6/15/2004	1,180	22.2	18.6	33.3	1,254	472
MW-35	6/8/2005	1,220	22.8	30.4	44.9	1,318	284
MW-35	6/28/2006	693	7.43	3.49	17.3	721	189
MW-35	6/26/2007	742	6.87	2.68	17.8	769	142
MW-35	5/12/2008	518	10.4	6.50	28.6	564	79.9
MW-35	4/29/2009	173	4.3	2.0	14.1	193	42.4
MW-35	4/15/2010	765	9.78	<5.00	<5.00	774.78	97.4
MW-36	5/12/2008	NOT SAMPLED (PRODUCT)					
MW-36	4/29/2009	NOT SAMPLED (PRODUCT)					
MW-36	4/15/2010	NOT SAMPLED (PRODUCT)					
MW-37	6/15/2004	259	8.7	1.4	18	287	64.3
MW-37	6/8/2005	209	4.2	<1.0	7.4	221	55.5
MW-37	6/28/2006	133	2.39	<1.00	3.81	139	49.4
MW-37	5/12/2008	NOT SAMPLED (PRODUCT)					
MW-37	4/29/2009	162	1.9	<1.0	3.0	167	36.4
MW-37	4/15/2010	NOT SAMPLED (PRODUCT)					
MW-38	5/29/2001	9.9	ND	0.76	ND	10.7	18.9
MW-38	5/30/2002	5.4	0.72	< 1.0	1.4	7.52	6.9
MW-38	6/30/2003	17.2	4.2	0.84 ^j	2.1	23.5	29.5
MW-38	6/15/2004	9.6	1.8	0.55 ^j	2.1	13.5	12.7
MW-38	6/8/2005	5.5	<1.0	<1.0	<1.0	5.5	1.8
MW-38	6/28/2006	5.71	<1.00	<1.00	<3.00	5.71	22.9
MW-38	6/26/2007	2.33	<1.00	<1.00	<3.00	2.33	2.24
MW-38	5/12/2008	10.1	<1.0	3.80	1.60	15.5	3.80
MW-38	4/29/2009	2.9	<1.0	<1.0	<1.0	2.9	3.4
MW-38	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00

Table 2
Historical Groundwater Analytical Results Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

		(ug/L)					
Sample Location	Date	Benzene	Toluene	Ethylbenzene	Xylenes, Total	Total BTEX	MTBE
< GW Standard >		< 0.7 >	< 5 >	< 5 >	< 5 >	----	< 10 >
MW-39	6/15/2004	296	21	19.2	42.4	379	125
MW-39	6/8/2005	246	14.8	12.5	27.6	301	74.8
MW-39	6/28/2006	119	7.29	3.45	14.1	144	60.9
MW-39	6/26/2007	136	7.04	3.21	17.0	163	57.3
MW-39	5/12/2008	225	13.8	4.50	19.3	263	69.9
MW-39	4/29/2009	183	7.3	4.9	20.6	216	65.5
MW-39	4/15/2010	65.9	<5.00	<5.00	<5.00	65.9	36.7
MW-40	5/12/2008	NOT SAMPLED (PRODUCT)					
MW-40	4/29/2009	NOT SAMPLED (PRODUCT)					
MW-40	4/15/2010	NOT SAMPLED (PRODUCT)					
MW-41	6/8/2005	347	10.7	2.7	22.1	383	68.2
MW-41	5/12/2008	NOT SAMPLED (PRODUCT)					
MW-41	4/29/2009	NOT SAMPLED (PRODUCT)					
MW-41	4/15/2010	NOT SAMPLED (PRODUCT)					
MW-42	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
MW-43	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	17.5
MW-44	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
TW-01	5/12/2008	NOT ACCESSIBLE (FLOODED)					
TW-01	4/29/2009	NOT SAMPLED (PRODUCT)					
TW-01	4/15/2010	NOT ACCESSIBLE (FLOODED)					
TW-02	6/28/2006	41.9	2.63	1.84	4.22	50.6	2.97
TW-02	5/12/2008	17.3	1.0	<1.0	<1.0	18.3	<1.0
TW-02	4/29/2009	3.4	<1.0	<1.0	<1.0	3.4	<1.0
TW-02	4/15/2010	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
TW-03	6/28/2006	<1.00	<1.00	<1.00	<3.00	<6.00	<1.00
TW-03	5/12/2008	NOT ACCESSIBLE (FLOODED)					
TW-03	4/29/2009	NOT ACCESSIBLE (FLOODED)					
TW-03	4/15/2010	NOT ACCESSIBLE (FLOODED)					
TW-04	5/12/2008	NOT ACCESSIBLE (FLOODED)					
TW-04	4/29/2009	NOT ACCESSIBLE (FLOODED)					
TW-04	4/15/2010	NOT ACCESSIBLE (FLOODED)					
TW-05	5/12/2008	NOT ACCESSIBLE (FLOODED)					
TW-05	4/29/2009	NOT SAMPLED (PRODUCT)					
TW-05	4/15/2010	NOT ACCESSIBLE (FLOODED)					
TW-06	5/12/2008	NOT ACCESSIBLE (FLOODED)					
TW-06	4/29/2009	NOT ACCESSIBLE (FLOODED)					
TW-06	4/15/2010	NOT SAMPLED (PRODUCT)					

Notes:

GW Standard = Values in **bold and italic** exceed the Groundwater Standard.

ug/L = micrograms per liter, or parts per billion (ppb)

NA = Sample not analyzed for target parameter.

NS = No sample collected from well.

ND(X) = Parameter not-detected at the reporting limit (or method detection limit if shown)(X).

<X = Parameter detected below the method limit of quantitation (X).

J = The target analyte was positively identified below the MQL and above the SQL.

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-01	104.99	---	2.58	---	---	102.41	102.41	---	---
2/21/2006	MW-01	104.99	---	2.81	---	---	102.18	102.18	---	---
3/7/2006	MW-01	104.99	---	3.09	---	---	101.90	101.90	---	---
5/18/2006	MW-01	104.99	---	2.84	---	---	102.15	102.15	---	---
6/28/2006	MW-01	104.99	---	2.63	---	---	102.36	102.36	---	---
8/16/2006	MW-01	104.99	---	2.78	---	---	102.21	102.21	---	---
9/29/2006	MW-01	104.99	---	2.66	---	---	102.33	102.33	---	---
10/20/2006	MW-01	104.99	---	2.65	---	---	102.34	102.34	---	---
11/22/2006	MW-01	104.99	---	2.76	---	---	102.23	102.23	---	---
12/15/2006	MW-01	104.99	---	3.06	---	---	101.93	101.93	---	---
1/23/2007	MW-01	104.99	---	3.16	---	---	101.83	101.83	---	---
2/2/2007	MW-01	104.99	---	3.27	---	---	101.72	101.72	---	---
3/5/2007	MW-01	104.99	---	2.98	---	---	102.01	102.01	---	---
5/1/2007	MW-01	104.99	---	2.77	---	---	102.22	102.22	---	---
6/22/2007	MW-01	104.99	---	3.15	---	---	101.84	101.84	---	---
6/26/2007	MW-01	104.99	---	2.87	---	---	102.12	102.12	---	---
7/6/2007	MW-01	104.99	---	2.83	---	---	102.16	102.16	---	---
8/1/2007	MW-01	104.99	---	2.75	---	---	102.24	102.24	---	---
8/7/2007	MW-01	104.99	---	2.81	---	---	102.18	102.18	---	---
9/14/2007	MW-01	104.99	---	3.19	---	---	101.80	101.80	---	---
10/8/2007	MW-01	104.99	---	3.39	---	---	101.60	101.60	---	---
11/20/2007	MW-01	104.99	---	3.06	---	---	101.93	101.93	---	---
12/26/2007	MW-01	104.99	---	3.25	---	---	101.74	101.74	---	---
1/2/2008	MW-01	104.99	---	3.06	---	---	101.93	101.93	---	---
3/5/2008	MW-01	104.99	---	3.02	---	---	101.97	101.97	---	---
4/23/2008	MW-01	104.99	---	3.05	---	---	101.94	101.94	---	---
5/12/2008	MW-01	104.99	---	3.10	---	---	101.89	101.89	---	---
6/27/2008	MW-01	104.99	---	3.15	---	---	101.84	101.84	---	---
8/5/2008	MW-01	104.99	---	3.29	---	---	101.70	101.70	---	---
9/10/2008	MW-01	104.99	---	3.16	---	---	101.83	101.83	---	---
10/27/2008	MW-01	104.99	---	3.41	---	---	101.58	101.58	---	---
11/4/2008	MW-01	104.99	---	3.49	---	---	101.50	101.50	---	---
1/5/2009	MW-01	104.99	---	3.30	---	---	101.69	101.69	---	---
2/27/2009	MW-01	104.99	---	3.79	---	---	101.20	101.20	---	---
3/9/2009	MW-01	104.99	---	3.74	---	---	101.25	101.25	---	---
4/20/2009	MW-01	104.99	---	3.56	---	---	101.43	101.43	---	---
4/29/2009	MW-01	104.99	---	3.33	---	---	101.66	101.66	---	---
5/6/2009	MW-01	104.99	---	3.05	---	---	101.94	101.94	---	---
6/2/2009	MW-01	104.99	---	3.48	---	---	101.51	101.51	---	---
7/6/2009	MW-01	104.99	---	3.02	---	---	101.97	101.97	---	---
8/14/2009	MW-01	104.99	---	3.19	---	---	101.80	101.80	---	---
9/28/2009	MW-01	104.99	---	3.45	---	---	101.54	101.54	---	---
10/13/2009	MW-01	104.99	---	3.59	---	---	101.40	101.40	---	---
11/23/2009	MW-01	104.99	---	3.48	---	---	101.51	101.51	---	---
12/2/2009	MW-01	104.99	---	3.58	---	---	101.41	101.41	---	---
1/12/2010	MW-01	104.99	---	3.49	---	---	101.50	101.50	---	---
2/2/2010	MW-01	104.99	---	3.62	---	---	101.37	101.37	---	---
3/2/2010	MW-01	104.99	---	2.46	---	---	102.53	102.53	---	---
3/15/2010	MW-01	104.99	---	2.29	---	---	102.70	102.70	---	---
4/15/2010	MW-01	104.99	---	2.90	---	---	102.09	102.09	---	---
4/22/2010	MW-01	104.99	---	2.92	---	---	102.07	102.07	---	---
5/3/2010	MW-01	104.99	---	2.21	---	---	102.78	102.78	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paldge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-02	103.94	---	3.14	---	---	100.80	100.80	---	---
2/21/2006	MW-02	103.94	---	3.90	---	---	100.04	100.04	---	---
3/7/2006	MW-02	103.94	4.04	4.11	0.07	99.90	99.83	99.88	0.10	Hand Bailing
5/18/2006	MW-02	103.94	3.59	3.69	0.10	100.35	100.25	100.32	0.25	---
6/28/2006	MW-02	103.94	3.45	3.61	0.16	100.49	100.33	100.45	---	---
8/16/2006	MW-02	103.94	3.75	4.29	0.54	100.19	99.65	100.05	---	---
9/29/2006	MW-02	103.94	3.52	3.84	0.32	100.42	100.10	100.34	---	---
10/20/2006	MW-02	103.94	3.19	3.49	0.30	100.75	100.45	100.67	---	---
11/22/2006	MW-02	103.94	3.34	3.52	0.18	100.60	100.42	100.55	---	---
12/15/2006	MW-02	103.94	3.98	4.16	0.18	99.96	99.78	99.91	---	---
1/23/2007	MW-02	103.94	4.36	4.52	0.16	99.58	99.42	99.54	0.25	---
2/2/2007	MW-02	103.94	4.21	4.39	0.18	99.73	99.55	99.68	0.25	---
3/5/2007	MW-02	103.94	4.00	4.18	0.18	99.94	99.76	99.89	0.25	---
5/1/2007	MW-02	103.94	3.36	3.53	0.17	100.58	100.41	100.54	0.25	---
6/22/2007	MW-02	103.94	3.80	4.15	0.35	100.14	99.79	100.05	0.25	---
6/26/2007	MW-02	103.94	4.02	4.42	0.40	99.92	99.52	99.82	---	---
7/6/2007	MW-02	103.94	3.92	4.32	0.40	100.02	99.62	99.92	0.25	---
8/1/2007	MW-02	103.94	3.59	3.94	0.35	100.35	100.00	100.26	0.25	---
8/7/2007	MW-02	103.94	---	NG	---	---	---	---	---	---
9/14/2007	MW-02	103.94	---	NG	---	---	---	---	---	---
10/9/2007	MW-02	103.94	4.05	4.59	0.54	99.89	99.35	99.75	0.50	---
11/20/2007	MW-02	103.94	4.00	4.39	0.39	99.94	99.55	99.84	0.50	---
12/26/2007	MW-02	103.94	---	3.95	---	---	99.99	99.99	---	---
1/2/2008	MW-02	103.94	3.73	4.09	0.36	100.21	99.85	100.12	0.50	---
3/5/2008	MW-02	103.94	---	NG	---	---	---	---	---	---
4/23/2008	MW-02	103.94	4.06	4.45	0.39	99.88	99.49	99.78	0.50	---
5/12/2008	MW-02	103.94	3.15	3.35	0.20	100.79	100.59	100.74	---	---
6/27/2008	MW-02	103.94	3.68	4.10	0.42	100.26	99.84	100.15	0.50	---
8/5/2008	MW-02	103.94	3.91	4.46	0.55	100.03	99.48	99.89	0.50	---
9/10/2008	MW-02	103.94	3.71	4.29	0.58	100.23	99.65	100.08	0.75	---
10/27/2008	MW-02	103.94	---	NG	---	---	---	---	---	---
11/4/2008	MW-02	103.94	4.61	4.62	0.01	99.33	99.32	99.33	---	---
1/5/2009	MW-02	103.94	4.15	4.50	0.35	99.79	99.44	99.70	0.50	---
2/27/2009	MW-02	103.94	4.58	4.89	0.31	99.36	99.05	99.28	0.50	---
3/9/2009	MW-02	103.94	4.00	4.53	0.53	99.94	99.41	99.80	1.00	---
4/20/2009	MW-02	103.94	3.84	4.30	0.46	100.10	99.64	99.98	1.00	---
4/29/2009	MW-02	103.94	4.42	5.41	0.99	99.52	98.53	99.26	0.75	---
5/6/2009	MW-02	103.94	3.49	3.97	0.48	100.45	99.97	100.33	0.75	---
6/2/2009	MW-02	103.94	3.93	4.44	0.51	100.01	99.50	99.88	0.75	---
7/6/2009	MW-02	103.94	3.42	3.70	0.28	100.52	100.24	100.45	0.50	---
8/14/2009	MW-02	103.94	3.70	4.07	0.37	100.24	99.87	100.14	0.50	---
9/28/2009	MW-02	103.94	3.78	4.04	0.26	100.16	99.90	100.09	0.50	---
10/13/2009	MW-02	103.94	4.01	4.32	0.31	99.93	99.62	99.85	0.50	---
11/23/2009	MW-02	103.94	3.77	3.79	0.02	100.17	100.15	100.16	0.50	---
12/2/2009	MW-02	103.94	4.07	4.12	0.05	99.87	99.82	99.86	0.50	---
1/12/2010	MW-02	103.94	4.05	4.09	0.04	99.89	99.85	99.88	---	---
2/2/2010	MW-02	103.94	4.24	4.35	0.11	99.70	99.59	99.67	0.25	---
3/2/2010	MW-02	103.94	2.56	2.81	0.25	101.38	101.13	101.32	0.25	---
3/15/2010	MW-02	103.94	1.81	1.81	0.00	102.13	102.13	102.13	---	Trace LNAPL
4/15/2010	MW-02	103.94	3.77	3.79	0.02	100.17	100.15	100.16	---	---
4/22/2010	MW-02	103.94	---	3.53	---	---	100.41	100.41	---	---
5/3/2010	MW-02	103.94	3.28	3.31	0.03	100.66	100.63	100.65	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-03	103.94	---	2.15	---	---	101.79	101.79	---	---
2/21/2006	MW-03	103.94	---	2.40	---	---	101.54	101.54	---	---
3/7/2006	MW-03	103.94	---	2.72	---	---	101.22	101.22	---	---
5/18/2006	MW-03	103.94	---	2.39	---	---	101.55	101.55	---	---
6/28/2006	MW-03	103.94	---	2.12	---	---	101.82	101.82	---	---
8/16/2006	MW-03	103.94	---	2.31	---	---	101.63	101.63	---	---
9/29/2006	MW-03	103.94	---	2.35	---	---	101.59	101.59	---	---
10/20/2006	MW-03	103.94	---	2.04	---	---	101.90	101.90	---	---
11/22/2006	MW-03	103.94	---	2.31	---	---	101.63	101.63	---	---
12/15/2006	MW-03	103.94	---	2.63	---	---	101.31	101.31	---	---
1/23/2007	MW-03	103.94	---	2.81	---	---	101.13	101.13	---	---
2/2/2007	MW-03	103.94	---	3.51	---	---	100.43	100.43	---	---
3/5/2007	MW-03	103.94	---	2.49	---	---	101.45	101.45	---	---
5/1/2007	MW-03	103.94	---	2.14	---	---	101.80	101.80	---	---
6/22/2007	MW-03	103.94	---	2.65	---	---	101.29	101.29	---	---
6/26/2007	MW-03	103.94	---	2.74	---	---	101.20	101.20	---	---
7/6/2007	MW-03	103.94	---	2.52	---	---	101.42	101.42	---	---
8/1/2007	MW-03	103.94	---	2.29	---	---	101.65	101.65	---	---
8/7/2007	MW-03	103.94	---	2.43	---	---	101.51	101.51	---	---
9/14/2007	MW-03	103.94	---	2.63	---	---	101.31	101.31	---	---
10/8/2007	MW-03	103.94	---	3.04	---	---	100.90	100.90	---	---
11/20/2007	MW-03	103.94	---	2.99	---	---	100.95	100.95	---	---
12/26/2007	MW-03	103.94	---	2.65	---	---	101.29	101.29	---	---
1/2/2008	MW-03	103.94	---	2.48	---	---	101.46	101.46	---	---
3/5/2008	MW-03	103.94	---	2.56	---	---	101.38	101.38	---	---
4/23/2008	MW-03	103.94	---	3.04	---	---	100.90	100.90	---	---
5/12/2008	MW-03	103.94	---	2.70	---	---	101.24	101.24	---	---
6/27/2008	MW-03	103.94	---	2.68	---	---	101.26	101.26	---	---
8/5/2008	MW-03	103.94	---	2.94	---	---	101.00	101.00	---	---
9/10/2008	MW-03	103.94	---	2.71	---	---	101.23	101.23	---	---
10/27/2008	MW-03	103.94	---	2.79	---	---	101.15	101.15	---	---
11/4/2008	MW-03	103.94	---	2.95	---	---	100.99	100.99	---	---
1/5/2009	MW-03	103.94	---	2.67	---	---	101.27	101.27	---	---
2/27/2009	MW-03	103.94	---	3.29	---	---	100.65	100.65	---	---
3/9/2009	MW-03	103.94	---	2.93	---	---	101.01	101.01	---	---
4/20/2009	MW-03	103.94	---	3.02	---	---	100.92	100.92	---	---
4/29/2009	MW-03	103.94	---	2.87	---	---	101.07	101.07	---	---
5/6/2009	MW-03	103.94	---	2.59	---	---	101.35	101.35	---	---
6/2/2009	MW-03	103.94	---	2.94	---	---	101.00	101.00	---	---
7/6/2009	MW-03	103.94	---	2.35	---	---	101.59	101.59	---	---
8/14/2009	MW-03	103.94	---	2.58	---	---	101.36	101.36	---	---
9/28/2009	MW-03	103.94	---	2.76	---	---	101.18	101.18	---	---
10/13/2009	MW-03	103.94	---	3.07	---	---	100.87	100.87	---	---
11/23/2009	MW-03	103.94	---	2.81	---	---	101.13	101.13	---	---
12/2/2009	MW-03	103.94	---	2.94	---	---	101.00	101.00	---	---
1/12/2010	MW-03	103.94	---	2.87	---	---	101.07	101.07	---	---
2/2/2010	MW-03	103.94	---	3.05	---	---	100.89	100.89	---	---
3/2/2010	MW-03	103.94	---	1.28	---	---	102.66	102.66	---	---
3/15/2010	MW-03	103.94	---	1.43	---	---	102.51	102.51	---	---
4/15/2010	MW-03	103.94	---	2.53	---	---	101.41	101.41	---	---
4/22/2010	MW-03	103.94	---	2.61	---	---	101.33	101.33	---	---
5/3/2010	MW-03	103.94	---	2.42	---	---	101.52	101.52	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-08990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-04	103.24	1.90	1.92	0.02	101.34	101.32	101.33	0.10	---
2/21/2006	MW-04	103.24	2.20	2.21	0.01	101.04	101.03	101.04	0.10	---
3/7/2006	MW-04	103.24	2.40	2.42	0.02	100.84	100.82	100.83	0.10	Hand Bailing
5/18/2006	MW-04	103.24	---	2.08	---	---	101.16	101.16	---	---
6/28/2006	MW-04	103.24	1.91	1.93	0.02	101.33	101.31	101.32	---	---
8/16/2006	MW-04	103.24	2.20	2.21	0.01	101.04	101.03	101.04	---	---
9/29/2006	MW-04	103.24	---	2.15	---	---	101.09	101.09	---	---
10/20/2006	MW-04	103.24	1.86	1.97	0.11	101.38	101.27	101.35	---	---
11/22/2006	MW-04	103.24	2.06	2.16	0.10	101.18	101.08	101.15	---	---
12/15/2006	MW-04	103.24	2.30	2.39	0.09	100.94	100.85	100.92	---	---
1/23/2007	MW-04	103.24	2.53	2.57	0.04	100.71	100.67	100.70	---	---
2/2/2007	MW-04	103.24	2.63	2.72	0.09	100.61	100.52	100.59	0.25	---
3/5/2007	MW-04	103.24	2.38	2.39	0.01	100.86	100.85	100.86	0.25	---
5/1/2007	MW-04	103.24	1.78	1.82	0.04	101.46	101.42	101.45	0.25	---
6/22/2007	MW-04	103.24	2.17	2.26	0.09	101.07	100.98	101.05	---	---
6/26/2007	MW-04	103.24	2.30	2.42	0.12	100.94	100.82	100.91	---	---
7/6/2007	MW-04	103.24	2.28	2.40	0.12	100.96	100.84	100.93	0.25	---
8/1/2007	MW-04	103.24	2.00	2.11	0.11	101.24	101.13	101.21	---	---
8/7/2007	MW-04	103.24	2.11	2.21	0.10	101.13	101.03	101.10	---	---
9/14/2007	MW-04	103.24	2.34	2.48	0.14	100.90	100.76	100.86	---	---
10/8/2007	MW-04	103.24	2.63	2.72	0.09	100.61	100.52	100.59	---	---
11/20/2007	MW-04	103.24	2.65	2.67	0.02	100.59	100.57	100.58	---	---
12/26/2007	MW-04	103.24	---	2.42	---	---	100.82	100.82	---	---
1/2/2008	MW-04	103.24	---	2.29	---	---	100.95	100.95	---	---
3/5/2008	MW-04	103.24	---	2.32	---	---	100.92	100.92	---	---
4/23/2008	MW-04	103.24	---	2.64	---	---	100.60	100.60	---	---
5/6/2008	MW-04	103.24	2.35	2.36	0.01	100.89	100.88	100.89	---	---
5/12/2008	MW-04	103.24	---	2.26	---	---	100.98	100.98	---	---
6/27/2008	MW-04	103.24	2.26	2.28	0.02	100.98	100.96	100.97	---	---
8/5/2008	MW-04	103.24	---	2.49	---	---	100.75	100.75	---	---
9/10/2008	MW-04	103.24	2.48	2.52	0.04	100.76	100.72	100.75	---	---
10/27/2008	MW-04	103.24	---	2.46	---	---	100.78	100.78	---	---
11/4/2008	MW-04	103.24	2.61	2.63	0.02	100.63	100.61	100.62	---	---
1/5/2009	MW-04	103.24	2.40	2.44	0.04	100.84	100.80	100.83	---	---
2/27/2009	MW-04	103.24	2.88	2.95	0.07	100.36	100.29	100.34	---	---
3/9/2009	MW-04	103.24	2.81	2.84	0.03	100.43	100.40	100.42	---	---
4/20/2009	MW-04	103.24	---	2.67	---	---	100.57	100.57	---	---
4/29/2009	MW-04	103.24	---	2.56	---	---	100.68	100.68	---	---
6/2/2009	MW-04	103.24	2.48	2.50	0.02	100.76	100.74	100.75	---	---
7/6/2009	MW-04	103.24	1.97	1.98	0.01	101.27	101.26	101.27	---	---
8/14/2009	MW-04	103.24	2.25	2.42	0.17	100.99	100.82	100.95	0.25	---
9/28/2009	MW-04	103.24	2.37	2.39	0.02	100.87	100.85	100.86	---	---
10/13/2009	MW-04	103.24	2.59	2.68	0.09	100.65	100.56	100.63	0.25	---
11/23/2009	MW-04	103.24	2.40	2.46	0.06	100.84	100.78	100.82	0.25	---
12/2/2009	MW-04	103.24	2.54	2.58	0.04	100.70	100.66	100.69	0.25	---
1/12/2010	MW-04	103.24	2.49	2.54	0.05	100.75	100.70	100.74	---	---
2/2/2010	MW-04	103.24	2.64	2.69	0.05	100.60	100.55	100.59	---	---
3/2/2010	MW-04	103.24	---	1.59	---	---	101.65	101.65	---	---
3/15/2010	MW-04	103.24	0.98	0.98	0.00	102.26	102.26	102.26	---	Trace LNAPL
4/15/2010	MW-04	103.24	2.11	2.16	0.05	101.13	101.08	101.12	---	---
4/22/2010	MW-04	103.24	2.13	2.15	0.02	101.11	101.09	101.10	---	---
5/3/2010	MW-04	103.24	1.91	1.95	0.04	101.33	101.29	101.32	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603
25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft.)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-05	102.64	---	1.78	---	---	100.86	100.86	---	---
2/21/2006	MW-05	102.64	---	1.60	---	---	101.04	101.04	---	---
3/7/2006	MW-05	102.64	---	1.85	---	---	100.79	100.79	---	---
5/18/2006	MW-05	102.64	---	1.52	---	---	101.12	101.12	---	---
6/28/2006	MW-05	102.64	---	1.01	---	---	101.63	101.63	---	---
8/16/2006	MW-05	102.64	---	1.61	---	---	101.03	101.03	---	---
9/29/2006	MW-05	102.64	---	1.61	---	---	101.03	101.03	---	---
10/20/2006	MW-05	102.64	---	0.79	---	---	101.85	101.85	---	---
11/22/2006	MW-05	102.64	---	1.54	---	---	101.10	101.10	---	---
12/15/2006	MW-05	102.64	---	1.74	---	---	100.90	100.90	---	---
1/23/2007	MW-05	102.64	---	NG	---	---	---	---	---	---
2/2/2007	MW-05	102.64	---	2.12	---	---	100.52	100.52	---	---
3/5/2007	MW-05	102.64	---	1.88	---	---	100.76	100.76	---	---
5/1/2007	MW-05	102.64	---	1.26	---	---	101.38	101.38	---	---
6/22/2007	MW-05	102.64	---	1.65	---	---	100.99	100.99	---	---
6/26/2007	MW-05	102.64	---	1.80	---	---	100.84	100.84	---	---
7/6/2007	MW-05	102.64	---	1.70	---	---	100.94	100.94	---	---
8/1/2007	MW-05	102.64	---	1.42	---	---	101.22	101.22	---	---
8/7/2007	MW-05	102.64	---	1.55	---	---	101.09	101.09	---	---
9/14/2007	MW-05	102.64	---	1.84	---	---	100.80	100.80	---	---
10/8/2007	MW-05	102.64	---	2.12	---	---	100.52	100.52	---	---
11/20/2007	MW-05	102.64	---	2.00	---	---	100.64	100.64	---	---
12/26/2007	MW-05	102.64	---	1.80	---	---	100.84	100.84	---	---
1/2/2008	MW-05	102.64	---	1.74	---	---	100.90	100.90	---	---
3/5/2008	MW-05	102.64	---	2.10	---	---	100.54	100.54	---	---
4/23/2008	MW-05	102.64	---	NG	---	---	---	---	---	---
5/6/2008	MW-05	102.64	---	1.78	---	---	100.86	100.86	---	---
5/12/2008	MW-05	102.64	---	NG	---	---	---	---	---	---
6/27/2008	MW-05	102.64	---	1.78	---	---	100.86	100.86	---	---
8/5/2008	MW-05	102.64	---	1.95	---	---	100.69	100.69	---	---
9/10/2008	MW-05	102.64	---	1.95	---	---	100.69	100.69	---	---
10/27/2008	MW-05	102.64	---	NG	---	---	---	---	---	---
11/4/2008	MW-05	102.64	---	2.09	---	---	100.55	100.55	---	---
1/5/2009	MW-05	102.64	---	1.88	---	---	100.76	100.76	---	---
2/27/2009	MW-05	102.64	---	2.32	---	---	100.32	100.32	---	---
3/9/2009	MW-05	102.64	---	2.29	---	---	100.35	100.35	---	---
4/20/2009	MW-05	102.64	---	2.13	---	---	100.51	100.51	---	---
4/29/2009	MW-05	102.64	---	2.24	---	---	100.40	100.40	---	---
6/2/2009	MW-05	102.64	---	1.99	---	---	100.65	100.65	---	---
7/6/2009	MW-05	102.64	---	1.48	---	---	101.16	101.16	---	---
8/14/2009	MW-05	102.64	---	1.75	---	---	100.89	100.89	---	---
9/28/2009	MW-05	102.64	---	1.85	---	---	100.79	100.79	---	---
10/13/2009	MW-05	102.64	---	2.09	---	---	100.55	100.55	---	---
11/23/2009	MW-05	102.64	---	1.89	---	---	100.75	100.75	---	---
12/2/2009	MW-05	102.64	---	1.99	---	---	100.65	100.65	---	---
1/12/2010	MW-05	102.64	---	1.95	---	---	100.69	100.69	---	---
2/2/2010	MW-05	102.64	---	2.07	---	---	100.57	100.57	---	---
3/2/2010	MW-05	102.64	---	1.06	---	---	101.58	101.58	---	---
3/15/2010	MW-05	102.64	---	NG	---	---	---	---	---	Flooded
4/15/2010	MW-05	102.64	---	1.37	---	---	101.27	101.27	---	---
4/22/2010	MW-05	102.64	---	1.59	---	---	101.05	101.05	---	---
5/3/2010	MW-05	102.64	---	NG	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603
25 Paldge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-06	103.42	---	3.23	---	---	100.19	100.19	---	---
2/21/2006	MW-06	103.42	---	4.59	---	---	98.83	98.83	---	---
3/7/2006	MW-06	103.42	---	4.37	---	---	99.05	99.05	---	---
5/18/2006	MW-06	103.42	---	3.46	---	---	99.96	99.96	---	---
6/28/2006	MW-06	103.42	---	2.28	---	---	101.14	101.14	---	---
8/16/2006	MW-06	103.42	---	4.69	---	---	98.73	98.73	---	---
9/29/2006	MW-06	103.42	---	3.65	---	---	99.77	99.77	---	---
10/20/2006	MW-06	103.42	---	2.57	---	---	100.85	100.85	---	---
11/22/2006	MW-06	103.42	---	2.84	---	---	100.58	100.58	---	---
12/15/2006	MW-06	103.42	---	4.21	---	---	99.21	99.21	---	---
1/23/2007	MW-06	103.42	---	4.65	---	---	98.77	98.77	---	---
2/2/2007	MW-06	103.42	---	2.45	---	---	100.97	100.97	---	---
3/5/2007	MW-06	103.42	---	3.67	---	---	99.75	99.75	---	---
5/1/2007	MW-06	103.42	---	3.41	---	---	100.01	100.01	---	---
6/22/2007	MW-06	103.42	---	4.29	---	---	99.13	99.13	---	---
6/26/2007	MW-06	103.42	---	4.10	---	---	99.32	99.32	---	---
7/6/2007	MW-06	103.42	---	4.73	---	---	98.69	98.69	---	---
8/1/2007	MW-06	103.42	---	3.69	---	---	99.73	99.73	---	---
8/7/2007	MW-06	103.42	---	3.91	---	---	99.51	99.51	---	---
9/14/2007	MW-06	103.42	---	4.12	---	---	99.30	99.30	---	---
10/8/2007	MW-06	103.42	---	2.81	---	---	100.61	100.61	---	---
11/20/2007	MW-06	103.42	---	3.49	---	---	99.93	99.93	---	---
12/26/2007	MW-06	103.42	---	3.76	---	---	99.66	99.66	---	---
1/2/2008	MW-06	103.42	---	4.05	---	---	99.37	99.37	---	---
3/5/2008	MW-06	103.42	---	3.00	---	---	100.42	100.42	---	---
4/23/2008	MW-06	103.42	---	4.30	---	---	99.12	99.12	---	---
5/12/2008	MW-06	103.42	---	2.80	---	---	100.62	100.62	---	---
6/27/2008	MW-06	103.42	---	3.93	---	---	99.49	99.49	---	---
8/5/2008	MW-06	103.42	---	4.19	---	---	99.23	99.23	---	---
9/10/2008	MW-06	103.42	---	3.89	---	---	99.53	99.53	---	---
10/27/2008	MW-06	103.42	---	2.00	---	---	101.42	101.42	---	---
11/4/2008	MW-06	103.42	---	4.79	---	---	98.63	98.63	---	---
1/5/2009	MW-06	103.42	---	4.39	---	---	99.03	99.03	---	---
2/27/2009	MW-06	103.42	---	4.18	---	---	99.24	99.24	---	---
3/9/2009	MW-06	103.42	---	2.36	---	---	101.06	101.06	---	---
4/20/2009	MW-06	103.42	---	3.54	---	---	99.88	99.88	---	---
4/29/2009	MW-06	103.42	---	6.20	---	---	97.22	97.22	---	---
5/6/2009	MW-06	103.42	---	3.06	---	---	100.36	100.36	---	---
6/2/2009	MW-06	103.42	---	4.63	---	---	98.79	98.79	---	---
7/6/2009	MW-06	103.42	---	3.68	---	---	99.74	99.74	---	---
8/14/2009	MW-06	103.42	---	4.96	---	---	98.46	98.46	---	---
9/28/2009	MW-06	103.42	---	4.34	---	---	99.08	99.08	---	---
10/13/2009	MW-06	103.42	---	4.49	---	---	98.93	98.93	---	---
11/23/2009	MW-06	103.42	---	4.24	---	---	99.18	99.18	---	---
12/2/2009	MW-06	103.42	---	2.55	---	---	100.87	100.87	---	---
1/12/2010	MW-06	103.42	---	3.87	---	---	99.55	99.55	---	---
2/2/2010	MW-06	103.42	---	4.45	---	---	98.97	98.97	---	---
3/2/2010	MW-06	103.42	---	2.34	---	---	101.08	101.08	---	---
3/15/2010	MW-06	103.42	---	1.86	---	---	101.56	101.56	---	---
4/15/2010	MW-06	103.42	---	5.08	---	---	98.34	98.34	---	---
4/22/2010	MW-06	103.42	---	5.08	---	---	98.34	98.34	---	---
5/3/2010	MW-06	103.42	---	4.59	---	---	98.83	98.83	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-07	102.86	---	4.81	---	---	98.05	98.05	---	---
2/21/2006	MW-07	102.86	---	4.94	---	---	97.92	97.92	---	---
3/7/2006	MW-07	102.86	---	4.84	---	---	98.02	98.02	---	---
5/18/2006	MW-07	102.86	---	4.91	---	---	97.95	97.95	---	---
6/28/2006	MW-07	102.86	---	4.11	---	---	98.75	98.75	---	---
8/16/2006	MW-07	102.86	---	4.85	---	---	98.01	98.01	---	---
9/29/2006	MW-07	102.86	---	4.63	---	---	98.23	98.23	---	---
10/20/2006	MW-07	102.86	---	3.50	---	---	99.36	99.36	---	---
11/22/2006	MW-07	102.86	---	4.43	---	---	98.43	98.43	---	---
12/15/2006	MW-07	102.86	---	4.57	---	---	98.29	98.29	---	---
1/23/2007	MW-07	102.86	---	4.11	---	---	98.75	98.75	---	---
2/2/2007	MW-07	102.86	---	2.95	---	---	99.91	99.91	---	---
3/5/2007	MW-07	102.86	---	4.55	---	---	98.31	98.31	---	---
5/1/2007	MW-07	102.86	---	3.97	---	---	98.89	98.89	---	---
6/22/2007	MW-07	102.86	---	4.55	---	---	98.31	98.31	---	---
6/26/2007	MW-07	102.86	---	4.53	---	---	98.33	98.33	---	---
7/6/2007	MW-07	102.86	---	4.61	---	---	98.25	98.25	---	---
8/1/2007	MW-07	102.86	---	4.61	---	---	98.25	98.25	---	---
8/7/2007	MW-07	102.86	---	4.53	---	---	98.33	98.33	---	---
9/14/2007	MW-07	102.86	---	4.55	---	---	98.31	98.31	---	---
10/8/2007	MW-07	102.86	---	3.03	---	---	99.83	99.83	---	---
11/20/2007	MW-07	102.86	---	4.48	---	---	98.38	98.38	---	---
12/26/2007	MW-07	102.86	---	4.22	---	---	98.64	98.64	---	---
1/2/2008	MW-07	102.86	---	4.55	---	---	98.31	98.31	---	---
3/5/2008	MW-07	102.86	---	4.59	---	---	98.27	98.27	---	---
4/23/2008	MW-07	102.86	---	4.36	---	---	98.50	98.50	---	---
5/12/2008	MW-07	102.86	---	4.20	---	---	98.66	98.66	---	---
6/27/2008	MW-07	102.86	---	4.50	---	---	98.36	98.36	---	---
8/5/2008	MW-07	102.86	---	4.59	---	---	98.27	98.27	---	---
9/10/2008	MW-07	102.86	---	4.49	---	---	98.37	98.37	---	---
10/27/2008	MW-07	102.86	---	NG	---	---	---	---	---	---
1/5/2009	MW-07	102.86	---	NG	---	---	---	---	---	Abandoned
3/2/2010	MW-07R	---	---	2.52	---	---	---	---	---	---
3/15/2010	MW-07R	---	---	3.78	---	---	---	---	---	---
4/15/2010	MW-07R	---	---	5.80	---	---	---	---	---	---
4/22/2010	MW-07R	---	---	5.67	---	---	---	---	---	---
5/3/2010	MW-07R	---	---	5.45	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/23/2006	MW-08	104.05	---	4.67	---	---	99.38	99.38	---	---
3/7/2006	MW-08	104.05	---	NG	---	---	---	---	---	---
5/18/2006	MW-08	104.05	---	NG	---	---	---	---	---	---
6/28/2006	MW-08	104.05	---	NG	---	---	---	---	---	---
9/29/2006	MW-08	104.05	---	NG	---	---	---	---	---	---
10/20/2006	MW-08	104.05	---	3.84	---	---	100.21	100.21	---	---
11/22/2006	MW-08	104.05	---	5.06	---	---	98.99	98.99	---	---
12/15/2006	MW-08	104.05	---	5.91	---	---	98.14	98.14	---	---
2/2/2007	MW-08	104.05	---	3.40	---	---	100.65	100.65	---	---
3/5/2007	MW-08	104.05	---	5.13	---	---	98.92	98.92	---	---
5/1/2007	MW-08	104.05	---	4.44	---	---	99.61	99.61	---	---
6/22/2007	MW-08	104.05	---	5.81	---	---	98.24	98.24	---	---
6/26/2007	MW-08	104.05	---	5.58	---	---	98.47	98.47	---	---
7/6/2007	MW-08	104.05	---	6.07	---	---	97.98	97.98	---	---
8/1/2007	MW-08	104.05	---	5.36	---	---	98.69	98.69	---	---
8/7/2007	MW-08	104.05	---	5.85	---	---	98.20	98.20	---	---
9/14/2007	MW-08	104.05	---	5.05	---	---	99.00	99.00	---	---
10/8/2007	MW-08	104.05	---	3.53	---	---	100.52	100.52	---	---
11/20/2007	MW-08	104.05	---	5.79	---	---	98.26	98.26	---	---
12/26/2007	MW-08	104.05	---	4.87	---	---	99.18	99.18	---	---
1/2/2008	MW-08	104.05	---	5.88	---	---	98.17	98.17	---	---
3/5/2008	MW-08	104.05	---	5.15	---	---	98.90	98.90	---	---
4/23/2008	MW-08	104.05	---	5.88	---	---	98.17	98.17	---	---
5/12/2008	MW-08	104.05	---	4.63	---	---	99.42	99.42	---	---
6/27/2008	MW-08	104.05	---	5.78	---	---	98.27	98.27	---	---
8/5/2008	MW-08	104.05	---	6.00	---	---	98.05	98.05	---	---
9/10/2008	MW-08	104.05	---	5.47	---	---	98.58	98.58	---	---
10/27/2008	MW-08	104.05	---	NG	---	---	---	---	---	---
1/5/2009	MW-08	104.05	---	NG	---	---	---	---	---	---
5/15/2009	MW-08	104.05	---	5.62	---	---	98.43	98.43	---	---
6/2/2009	MW-08	104.05	---	5.49	---	---	98.56	98.56	---	---
7/6/2009	MW-08	104.05	---	5.48	---	---	98.57	98.57	---	---
8/14/2009	MW-08	104.05	---	5.97	---	---	98.08	98.08	---	---
9/28/2009	MW-08	104.05	---	5.92	---	---	98.13	98.13	---	---
10/13/2009	MW-08	104.05	---	6.15	---	---	97.90	97.90	---	---
11/23/2009	MW-08	104.05	---	5.24	---	---	98.81	98.81	---	---
12/2/2009	MW-08	104.05	---	3.65	---	---	100.40	100.40	---	---
1/12/2010	MW-08	104.05	---	5.54	---	---	98.51	98.51	---	---
2/2/2010	MW-08	104.05	---	5.34	---	---	98.71	98.71	---	---
3/2/2010	MW-08	104.05	---	3.04	---	---	101.01	101.01	---	---
3/15/2010	MW-08	104.05	---	4.41	---	---	99.64	99.64	---	---
4/15/2010	MW-08	104.05	---	6.48	---	---	97.57	97.57	---	---
4/22/2010	MW-08	104.05	---	6.18	---	---	97.87	97.87	---	---
5/3/2010	MW-08	104.05	---	6.10	---	---	97.95	97.95	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-09	103.83	---	5.12	---	---	98.71	98.71	---	---
2/21/2006	MW-09	103.83	---	5.90	---	---	97.93	97.93	---	---
3/7/2006	MW-09	103.83	---	NG	---	---	---	---	---	---
5/18/2006	MW-09	103.83	---	5.69	---	---	98.14	98.14	---	---
6/28/2006	MW-09	103.83	---	4.36	---	---	99.47	99.47	---	---
8/16/2006	MW-09	103.83	---	5.92	---	---	97.91	97.91	---	---
9/29/2006	MW-09	103.83	---	5.75	---	---	98.08	98.08	---	---
10/20/2006	MW-09	103.83	---	3.97	---	---	99.86	99.86	---	---
11/22/2006	MW-09	103.83	---	4.88	---	---	98.95	98.95	---	---
12/15/2006	MW-09	103.83	---	5.75	---	---	98.08	98.08	---	---
1/23/2007	MW-09	103.83	---	4.40	---	---	99.43	99.43	---	---
2/2/2007	MW-09	103.83	---	3.21	---	---	100.62	100.62	---	---
3/5/2007	MW-09	103.83	---	NG	---	---	---	---	---	---
5/1/2007	MW-09	103.83	---	4.18	---	---	99.65	99.65	---	---
6/22/2007	MW-09	103.83	---	5.79	---	---	98.04	98.04	---	---
6/26/2007	MW-09	103.83	---	5.41	---	---	98.42	98.42	---	---
7/6/2007	MW-09	103.83	---	5.91	---	---	97.92	97.92	---	---
8/1/2007	MW-09	103.83	---	5.14	---	---	98.69	98.69	---	---
8/7/2007	MW-09	103.83	---	6.77	---	---	97.06	97.06	---	---
9/14/2007	MW-09	103.83	---	4.71	---	---	99.12	99.12	---	---
10/8/2007	MW-09	103.83	---	3.29	---	---	100.54	100.54	---	---
11/20/2007	MW-09	103.83	---	5.72	---	---	98.11	98.11	---	---
12/26/2007	MW-09	103.83	---	4.40	---	---	99.43	99.43	---	---
1/2/2008	MW-09	103.83	---	5.77	---	---	98.06	98.06	---	---
3/5/2008	MW-09	103.83	---	5.00	---	---	98.83	98.83	---	---
4/23/2008	MW-09	103.83	---	5.81	---	---	98.02	98.02	---	---
5/12/2008	MW-09	103.83	---	4.40	---	---	99.43	99.43	---	---
6/27/2008	MW-09	103.83	---	5.75	---	---	98.08	98.08	---	---
8/5/2008	MW-09	103.83	---	5.91	---	---	97.92	97.92	---	---
9/10/2008	MW-09	103.83	---	5.41	---	---	98.42	98.42	---	---
10/27/2008	MW-09	103.83	---	NG	---	---	---	---	---	---
1/5/2009	MW-09	103.83	---	NG	---	---	---	---	---	---
5/15/2009	MW-09	103.83	---	5.63	---	---	98.20	98.20	---	---
6/2/2009	MW-09	103.83	---	5.45	---	---	98.38	98.38	---	---
7/6/2009	MW-09	103.83	---	5.34	---	---	98.49	98.49	---	---
8/14/2009	MW-09	103.83	---	5.91	---	---	97.92	97.92	---	---
9/28/2009	MW-09	103.83	---	5.82	---	---	98.01	98.01	---	---
10/13/2009	MW-09	103.83	---	6.08	---	---	97.75	97.75	---	---
11/23/2009	MW-09	103.83	---	5.25	---	---	98.58	98.58	---	---
12/2/2009	MW-09	103.83	---	3.63	---	---	100.20	100.20	---	---
1/12/2010	MW-09	103.83	---	5.67	---	---	98.16	98.16	---	---
2/2/2010	MW-09	103.83	---	5.33	---	---	98.50	98.50	---	---
3/2/2010	MW-09	103.83	---	2.97	---	---	100.86	100.86	---	---
3/15/2010	MW-09	103.83	---	4.26	---	---	99.57	99.57	---	---
4/15/2010	MW-09	103.83	---	6.46	---	---	97.37	97.37	---	---
4/22/2010	MW-09	103.83	---	6.12	---	---	97.71	97.71	---	---
5/3/2010	MW-09	103.83	---	6.05	---	---	97.78	97.78	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-13	107.78	---	6.79	---	---	100.99	100.99	---	---
2/21/2006	MW-13	107.78	---	7.99	---	---	99.79	99.79	---	---
3/7/2006	MW-13	107.78	---	7.39	---	---	100.39	100.39	---	---
5/18/2006	MW-13	107.78	---	6.82	---	---	100.96	100.96	---	---
6/28/2006	MW-13	107.78	---	6.90	---	---	100.88	100.88	---	---
8/16/2006	MW-13	107.78	---	7.16	---	---	100.62	100.62	---	---
9/29/2006	MW-13	107.78	---	7.21	---	---	100.57	100.57	---	---
10/20/2006	MW-13	107.78	---	6.69	---	---	101.09	101.09	---	---
11/22/2006	MW-13	107.78	---	6.91	---	---	100.87	100.87	---	---
12/15/2006	MW-13	107.78	---	7.41	---	---	100.37	100.37	---	---
1/23/2007	MW-13	107.78	---	7.31	---	---	100.47	100.47	---	---
2/2/2007	MW-13	107.78	---	7.51	---	---	100.27	100.27	---	---
3/5/2007	MW-13	107.78	---	6.57	---	---	101.21	101.21	---	---
5/1/2007	MW-13	107.78	---	7.05	---	---	100.73	100.73	---	---
6/22/2007	MW-13	107.78	---	7.45	---	---	100.33	100.33	---	---
6/26/2007	MW-13	107.78	---	7.62	---	---	100.16	100.16	---	---
7/6/2007	MW-13	107.78	---	6.99	---	---	100.79	100.79	---	---
8/1/2007	MW-13	107.78	---	7.15	---	---	100.63	100.63	---	---
8/7/2007	MW-13	107.78	---	7.25	---	---	100.53	100.53	---	---
9/14/2007	MW-13	107.78	---	7.38	---	---	100.40	100.40	---	---
10/8/2007	MW-13	107.78	---	7.55	---	---	100.23	100.23	---	---
11/20/2007	MW-13	107.78	---	7.23	---	---	100.55	100.55	---	---
12/26/2007	MW-13	107.78	---	7.09	---	---	100.69	100.69	---	---
1/2/2008	MW-13	107.78	---	7.00	---	---	100.78	100.78	---	---
3/5/2008	MW-13	107.78	---	7.00	---	---	100.78	100.78	---	---
4/23/2008	MW-13	107.78	---	7.44	---	---	100.34	100.34	---	---
5/12/2008	MW-13	107.78	---	6.75	---	---	101.03	101.03	---	---
6/27/2008	MW-13	107.78	---	7.35	---	---	100.43	100.43	---	---
8/5/2008	MW-13	107.78	---	7.24	---	---	100.54	100.54	---	---
9/10/2008	MW-13	107.78	---	6.94	---	---	100.84	100.84	---	---
10/27/2008	MW-13	107.78	---	6.66	---	---	101.12	101.12	---	---
11/4/2008	MW-13	107.78	---	7.21	---	---	100.57	100.57	---	---
1/5/2009	MW-13	107.78	---	7.31	---	---	100.47	100.47	---	---
2/27/2009	MW-13	107.78	---	7.78	---	---	100.00	100.00	---	---
3/9/2009	MW-13	107.78	---	7.64	---	---	100.14	100.14	---	---
4/20/2009	MW-13	107.78	---	7.18	---	---	100.60	100.60	---	---
4/29/2009	MW-13	107.78	---	7.20	---	---	100.58	100.58	---	---
5/6/2009	MW-13	107.78	---	6.59	---	---	101.19	101.19	---	---
6/2/2009	MW-13	107.78	---	7.49	---	---	100.29	100.29	---	---
7/6/2009	MW-13	107.78	---	7.10	---	---	100.68	100.68	---	---
8/14/2009	MW-13	107.78	---	7.25	---	---	100.53	100.53	---	---
9/28/2009	MW-13	107.78	---	7.08	---	---	100.70	100.70	---	---
10/13/2009	MW-13	107.78	---	7.41	---	---	100.37	100.37	---	---
11/23/2009	MW-13	107.78	---	7.18	---	---	100.60	100.60	---	---
12/2/2009	MW-13	107.78	---	7.35	---	---	100.43	100.43	---	---
1/12/2010	MW-13	107.78	---	7.43	---	---	100.35	100.35	---	---
2/2/2010	MW-13	107.78	---	7.28	---	---	100.50	100.50	---	---
3/2/2010	MW-13	107.78	---	6.49	---	---	101.29	101.29	---	---
3/15/2010	MW-13	107.78	---	5.99	---	---	101.79	101.79	---	---
4/15/2010	MW-13	107.78	---	2.37	---	---	105.41	105.41	---	---
4/22/2010	MW-13	107.78	---	7.32	---	---	100.46	100.46	---	---
5/3/2010	MW-13	107.78	---	6.52	---	---	101.26	101.26	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft.)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-14	107.74	---	5.72	---	---	102.02	102.02	---	---
2/21/2006	MW-14	107.74	---	6.97	---	---	100.77	100.77	---	---
3/7/2006	MW-14	107.74	---	6.58	---	---	101.16	101.16	---	---
5/18/2006	MW-14	107.74	---	5.99	---	---	101.75	101.75	---	---
6/28/2006	MW-14	107.74	---	5.95	---	---	101.79	101.79	---	---
8/16/2006	MW-14	107.74	---	6.22	---	---	101.52	101.52	---	---
9/29/2006	MW-14	107.74	---	6.38	---	---	101.36	101.36	---	---
10/20/2006	MW-14	107.74	---	5.85	---	---	101.89	101.89	---	---
11/22/2006	MW-14	107.74	---	6.23	---	---	101.51	101.51	---	---
12/15/2006	MW-14	107.74	---	6.67	---	---	101.07	101.07	---	---
1/23/2007	MW-14	107.74	---	6.63	---	---	101.11	101.11	---	---
2/2/2007	MW-14	107.74	---	6.94	---	---	100.80	100.80	---	---
3/5/2007	MW-14	107.74	---	5.79	---	---	101.95	101.95	---	---
5/1/2007	MW-14	107.74	---	5.68	---	---	102.06	102.06	---	---
6/22/2007	MW-14	107.74	---	6.54	---	---	101.20	101.20	---	---
6/26/2007	MW-14	107.74	---	6.68	---	---	101.06	101.06	---	---
7/6/2007	MW-14	107.74	---	5.93	---	---	101.81	101.81	---	---
8/1/2007	MW-14	107.74	---	6.05	---	---	101.69	101.69	---	---
8/7/2007	MW-14	107.74	---	6.25	---	---	101.49	101.49	---	---
9/14/2007	MW-14	107.74	---	6.54	---	---	101.20	101.20	---	---
10/8/2007	MW-14	107.74	---	6.95	---	---	100.79	100.79	---	---
11/20/2007	MW-14	107.74	---	6.45	---	---	101.29	101.29	---	---
12/26/2007	MW-14	107.74	---	6.01	---	---	101.73	101.73	---	---
1/2/2008	MW-14	107.74	---	5.85	---	---	101.89	101.89	---	---
3/5/2008	MW-14	107.74	---	6.19	---	---	101.55	101.55	---	---
4/23/2008	MW-14	107.74	---	6.80	---	---	100.94	100.94	---	---
5/6/2008	MW-14	107.74	---	5.57	---	---	102.17	102.17	---	---
5/12/2008	MW-14	107.74	---	6.00	---	---	101.74	101.74	---	---
6/27/2008	MW-14	107.74	---	6.53	---	---	101.21	101.21	---	---
8/5/2008	MW-14	107.74	---	6.33	---	---	101.41	101.41	---	---
9/10/2008	MW-14	107.74	---	5.68	---	---	102.06	102.06	---	---
10/27/2008	MW-14	107.74	---	6.00	---	---	101.74	101.74	---	---
11/4/2008	MW-14	107.74	---	6.25	---	---	101.49	101.49	---	---
1/5/2009	MW-14	107.74	---	6.31	---	---	101.43	101.43	---	---
2/27/2009	MW-14	107.74	---	6.94	---	---	100.80	100.80	---	---
3/9/2009	MW-14	107.74	---	6.95	---	---	100.79	100.79	---	---
4/20/2009	MW-14	107.74	---	6.39	---	---	101.35	101.35	---	---
4/29/2009	MW-14	107.74	---	6.30	---	---	101.44	101.44	---	---
6/2/2009	MW-14	107.74	---	6.75	---	---	100.99	100.99	---	---
7/6/2009	MW-14	107.74	---	8.93	---	---	98.81	98.81	---	---
8/14/2009	MW-14	107.74	---	6.33	---	---	101.41	101.41	---	---
9/28/2009	MW-14	107.74	---	6.12	---	---	101.62	101.62	---	---
10/13/2009	MW-14	107.74	---	6.53	---	---	101.21	101.21	---	---
11/23/2009	MW-14	107.74	---	6.27	---	---	101.47	101.47	---	---
12/2/2009	MW-14	107.74	---	6.68	---	---	101.06	101.06	---	---
1/12/2010	MW-14	107.74	---	6.64	---	---	101.10	101.10	---	---
2/2/2010	MW-14	107.74	---	6.43	---	---	101.31	101.31	---	---
3/2/2010	MW-14	107.74	---	5.44	---	---	102.30	102.30	---	---
3/15/2010	MW-14	107.74	---	5.09	---	---	102.65	102.65	---	---
4/15/2010	MW-14	107.74	---	6.55	---	---	101.19	101.19	---	---
4/22/2010	MW-14	107.74	---	6.94	---	---	100.80	100.80	---	---
5/3/2010	MW-14	107.74	---	5.61	---	---	102.13	102.13	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603
25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-15	103.99	---	2.87	---	---	101.12	101.12	---	---
2/21/2006	MW-15	103.99	---	2.94	---	---	101.05	101.05	---	---
3/7/2006	MW-15	103.99	---	3.31	---	---	100.68	100.68	---	---
5/18/2006	MW-15	103.99	---	3.10	---	---	100.89	100.89	---	---
6/28/2006	MW-15	103.99	---	2.85	---	---	101.14	101.14	---	---
8/16/2006	MW-15	103.99	---	3.02	---	---	100.97	100.97	---	---
9/29/2006	MW-15	103.99	---	3.00	---	---	100.99	100.99	---	---
10/20/2006	MW-15	103.99	---	2.93	---	---	101.06	101.06	---	---
11/22/2006	MW-15	103.99	---	2.93	---	---	101.06	101.06	---	---
12/15/2006	MW-15	103.99	---	3.29	---	---	100.70	100.70	---	---
2/2/2007	MW-15	103.99	---	3.58	---	---	100.41	100.41	---	---
3/5/2007	MW-15	103.99	---	3.34	---	---	100.65	100.65	---	---
5/1/2007	MW-15	103.99	---	2.70	---	---	101.29	101.29	---	---
6/22/2007	MW-15	103.99	---	3.25	---	---	100.74	100.74	---	---
6/26/2007	MW-15	103.99	---	3.37	---	---	100.62	100.62	---	---
7/6/2007	MW-15	103.99	---	3.38	---	---	100.61	100.61	---	---
8/1/2007	MW-15	103.99	---	2.99	---	---	101.00	101.00	---	---
8/7/2007	MW-15	103.99	---	3.09	---	---	100.90	100.90	---	---
9/14/2007	MW-15	103.99	---	3.48	---	---	100.51	100.51	---	---
10/8/2007	MW-15	103.99	---	3.79	---	---	100.20	100.20	---	---
11/20/2007	MW-15	103.99	---	3.66	---	---	100.33	100.33	---	---
12/26/2007	MW-15	103.99	---	3.27	---	---	100.72	100.72	---	---
1/2/2008	MW-15	103.99	---	3.15	---	---	100.84	100.84	---	---
3/5/2008	MW-15	103.99	---	3.16	---	---	100.83	100.83	---	---
4/23/2008	MW-15	103.99	---	3.50	---	---	100.49	100.49	---	---
5/12/2008	MW-15	103.99	---	3.22	---	---	100.77	100.77	---	---
6/27/2008	MW-15	103.99	---	3.13	---	---	100.86	100.86	---	---
8/5/2008	MW-15	103.99	---	3.49	---	---	100.50	100.50	---	---
9/10/2008	MW-15	103.99	---	3.46	---	---	100.53	100.53	---	---
10/27/2008	MW-15	103.99	---	3.39	---	---	100.60	100.60	---	---
11/4/2008	MW-15	103.99	---	NG	---	---	---	---	---	---
1/5/2009	MW-15	103.99	---	3.33	---	---	100.66	100.66	---	---
2/27/2009	MW-15	103.99	---	3.95	---	---	100.04	100.04	---	---
3/9/2009	MW-15	103.99	---	3.89	---	---	100.10	100.10	---	---
4/20/2009	MW-15	103.99	---	3.57	---	---	100.42	100.42	---	---
4/29/2009	MW-15	103.99	---	3.48	---	---	100.51	100.51	---	---
5/6/2009	MW-15	103.99	---	3.28	---	---	100.71	100.71	---	---
6/2/2009	MW-15	103.99	---	3.49	---	---	100.50	100.50	---	---
7/6/2009	MW-15	103.99	---	2.90	---	---	101.09	101.09	---	---
8/14/2009	MW-15	103.99	---	3.22	---	---	100.77	100.77	---	---
9/28/2009	MW-15	103.99	---	3.54	---	---	100.45	100.45	---	---
10/13/2009	MW-15	103.99	---	3.67	---	---	100.32	100.32	---	---
11/23/2009	MW-15	103.99	---	3.39	---	---	100.60	100.60	---	---
12/2/2009	MW-15	103.99	---	3.62	---	---	100.37	100.37	---	---
1/12/2010	MW-15	103.99	---	3.39	---	---	100.60	100.60	---	---
2/2/2010	MW-15	103.99	---	3.48	---	---	100.51	100.51	---	---
3/2/2010	MW-15	103.99	---	2.45	---	---	101.54	101.54	---	---
3/15/2010	MW-15	103.99	---	1.89	---	---	102.10	102.10	---	---
4/15/2010	MW-15	103.99	---	2.94	---	---	101.05	101.05	---	---
4/22/2010	MW-15	103.99	---	2.94	---	---	101.05	101.05	---	---
5/3/2010	MW-15	103.99	---	2.48	---	---	101.51	101.51	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft.)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-16	104.03	---	2.94	---	---	101.09	101.09	---	---
2/21/2006	MW-16	104.03	---	3.09	---	---	100.94	100.94	---	---
3/7/2006	MW-16	104.03	---	3.18	---	---	100.85	100.85	---	---
5/18/2006	MW-16	104.03	---	2.89	---	---	101.14	101.14	---	---
6/28/2006	MW-16	104.03	---	2.89	---	---	101.14	101.14	---	---
8/16/2006	MW-16	104.03	---	2.91	---	---	101.12	101.12	---	---
9/29/2006	MW-16	104.03	---	2.98	---	---	101.05	101.05	---	---
10/20/2006	MW-16	104.03	---	2.95	---	---	101.08	101.08	---	---
11/22/2006	MW-16	104.03	---	2.91	---	---	101.12	101.12	---	---
12/15/2006	MW-16	104.03	---	3.21	---	---	100.82	100.82	---	---
1/23/2007	MW-16	104.03	---	3.36	---	---	100.67	100.67	---	---
2/2/2007	MW-16	104.03	---	3.49	---	---	100.54	100.54	---	---
3/5/2007	MW-16	104.03	---	3.13	---	---	100.90	100.90	---	---
5/1/2007	MW-16	104.03	---	2.64	---	---	101.39	101.39	---	---
6/22/2007	MW-16	104.03	---	3.13	---	---	100.90	100.90	---	---
6/26/2007	MW-16	104.03	---	2.17	---	---	101.86	101.86	---	---
7/6/2007	MW-16	104.03	---	3.15	---	---	100.88	100.88	---	---
8/1/2007	MW-16	104.03	---	NG	---	---	---	---	---	---
8/7/2007	MW-16	104.03	---	NG	---	---	---	---	---	---
9/14/2007	MW-16	104.03	---	NG	---	---	---	---	---	---
10/8/2007	MW-16	104.03	---	3.58	---	---	100.45	100.45	---	---
11/20/2007	MW-16	104.03	---	3.51	---	---	100.52	100.52	---	---
12/26/2007	MW-16	104.03	---	3.16	---	---	100.87	100.87	---	---
1/2/2008	MW-16	104.03	---	3.05	---	---	100.98	100.98	---	---
3/5/2008	MW-16	104.03	---	3.09	---	---	100.94	100.94	---	---
4/23/2008	MW-16	104.03	---	3.42	---	---	100.61	100.61	---	---
5/12/2008	MW-16	104.03	---	3.00	---	---	101.03	101.03	---	---
6/27/2008	MW-16	104.03	---	3.03	---	---	101.00	101.00	---	---
8/5/2008	MW-16	104.03	---	3.29	---	---	100.74	100.74	---	---
9/10/2008	MW-16	104.03	---	3.18	---	---	100.85	100.85	---	---
10/27/2008	MW-16	104.03	---	3.19	---	---	100.84	100.84	---	---
11/4/2008	MW-16	104.03	---	4.00	---	---	100.03	100.03	---	---
1/5/2009	MW-16	104.03	---	3.18	---	---	100.85	100.85	---	---
2/27/2009	MW-16	104.03	---	3.79	---	---	100.24	100.24	---	---
3/9/2009	MW-16	104.03	---	3.81	---	---	100.22	100.22	---	---
4/20/2009	MW-16	104.03	---	3.44	---	---	100.59	100.59	---	---
4/29/2009	MW-16	104.03	---	3.31	---	---	100.72	100.72	---	---
5/6/2009	MW-16	104.03	---	3.12	---	---	100.91	100.91	---	---
6/2/2009	MW-16	104.03	---	3.39	---	---	100.64	100.64	---	---
7/6/2009	MW-16	104.03	---	NG	---	---	---	---	---	---
8/14/2009	MW-16	104.03	---	NG	---	---	---	---	---	---
9/28/2009	MW-16	104.03	---	2.98	---	---	101.05	101.05	---	---
10/13/2009	MW-16	104.03	---	3.49	---	---	100.54	100.54	---	---
11/23/2009	MW-16	104.03	---	NG	---	---	---	---	---	---
12/2/2009	MW-16	104.03	---	3.46	---	---	100.57	100.57	---	---
1/12/2010	MW-16	104.03	---	3.32	---	---	100.71	100.71	---	---
2/2/2010	MW-16	104.03	---	3.28	---	---	100.75	100.75	---	---
3/2/2010	MW-16	104.03	---	2.12	---	---	101.91	101.91	---	---
3/15/2010	MW-16	104.03	---	NG	---	---	---	---	---	Obstruction
4/15/2010	MW-16	104.03	---	2.24	---	---	101.79	101.79	---	---
4/22/2010	MW-16	104.03	---	2.86	---	---	101.17	101.17	---	---
5/3/2010	MW-16	104.03	---	1.86	---	---	102.17	102.17	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603
25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft.)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-17	104.06	---	2.25	---	---	101.81	101.81	---	---
2/21/2006	MW-17	104.06	---	3.11	---	---	100.95	100.95	---	---
3/7/2006	MW-17	104.06	---	3.44	---	---	100.62	100.62	---	---
5/18/2006	MW-17	104.06	---	3.14	---	---	100.92	100.92	---	---
6/28/2006	MW-17	104.06	---	2.96	---	---	101.10	101.10	---	---
8/16/2006	MW-17	104.06	---	3.12	---	---	100.94	100.94	---	---
9/29/2006	MW-17	104.06	---	3.15	---	---	100.91	100.91	---	---
10/20/2006	MW-17	104.06	---	3.04	---	---	101.02	101.02	---	---
11/22/2006	MW-17	104.06	---	3.04	---	---	101.02	101.02	---	---
12/15/2006	MW-17	104.06	---	3.60	---	---	100.46	100.46	---	---
1/23/2007	MW-17	104.06	---	3.68	---	---	100.38	100.38	---	---
2/2/2007	MW-17	104.06	---	3.90	---	---	100.16	100.16	---	---
3/5/2007	MW-17	104.06	---	3.28	---	---	100.78	100.78	---	---
5/1/2007	MW-17	104.06	---	2.73	---	---	101.33	101.33	---	---
6/22/2007	MW-17	104.06	---	3.38	---	---	100.68	100.68	---	---
6/26/2007	MW-17	104.06	---	3.54	---	---	100.52	100.52	---	---
7/6/2007	MW-17	104.06	---	3.48	---	---	100.58	100.58	---	---
8/1/2007	MW-17	104.06	---	2.99	---	---	101.07	101.07	---	---
8/7/2007	MW-17	104.06	---	3.15	---	---	100.91	100.91	---	---
9/14/2007	MW-17	104.06	---	3.65	---	---	100.41	100.41	---	---
10/8/2007	MW-17	104.06	---	3.97	---	---	100.09	100.09	---	---
11/20/2007	MW-17	104.06	---	3.72	---	---	100.34	100.34	---	---
12/26/2007	MW-17	104.06	---	3.27	---	---	100.79	100.79	---	---
1/2/2008	MW-17	104.06	---	3.11	---	---	100.95	100.95	---	---
3/5/2008	MW-17	104.06	---	3.19	---	---	100.87	100.87	---	---
4/23/2008	MW-17	104.06	---	3.70	---	---	100.36	100.36	---	---
5/12/2008	MW-17	104.06	---	3.20	---	---	100.86	100.86	---	---
6/27/2008	MW-17	104.06	---	3.23	---	---	100.83	100.83	---	---
8/5/2008	MW-17	104.06	---	3.41	---	---	100.65	100.65	---	---
9/10/2008	MW-17	104.06	---	3.00	---	---	101.06	101.06	---	---
10/27/2008	MW-17	104.06	---	3.66	---	---	100.40	100.40	---	---
11/4/2008	MW-17	104.06	---	3.53	---	---	100.53	100.53	---	---
1/5/2009	MW-17	104.06	---	3.31	---	---	100.75	100.75	---	---
2/27/2009	MW-17	104.06	---	4.21	---	---	99.85	99.85	---	---
3/9/2009	MW-17	104.06	---	4.16	---	---	99.90	99.90	---	---
4/20/2009	MW-17	104.06	---	3.63	---	---	100.43	100.43	---	---
4/29/2009	MW-17	104.06	---	3.35	---	---	100.71	100.71	---	---
5/6/2009	MW-17	104.06	---	3.23	---	---	100.83	100.83	---	---
6/2/2009	MW-17	104.06	---	3.65	---	---	100.41	100.41	---	---
7/6/2009	MW-17	104.06	---	2.90	---	---	101.16	101.16	---	---
8/14/2009	MW-17	104.06	---	3.12	---	---	100.94	100.94	---	---
9/28/2009	MW-17	104.06	---	3.64	---	---	100.42	100.42	---	---
10/13/2009	MW-17	104.06	---	3.68	---	---	100.38	100.38	---	---
11/23/2009	MW-17	104.06	---	4.38	---	---	99.68	99.68	---	---
12/2/2009	MW-17	104.06	---	3.65	---	---	100.41	100.41	---	---
1/12/2010	MW-17	104.06	---	3.59	---	---	100.47	100.47	---	---
2/2/2010	MW-17	104.06	---	3.46	---	---	100.60	100.60	---	---
3/2/2010	MW-17	104.06	---	2.27	---	---	101.79	101.79	---	---
3/15/2010	MW-17	104.06	---	1.66	---	---	102.40	102.40	---	---
4/15/2010	MW-17	104.06	---	3.17	---	---	100.89	100.89	---	---
4/22/2010	MW-17	104.06	---	2.58	---	---	101.48	101.48	---	---
5/3/2010	MW-17	104.06	---	NG	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
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Motiva Enterprises LLC Terminal # 58603
25 Paidge Avenue
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NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-18	104.05	---	2.56	---	---	101.49	101.49	---	---
2/21/2006	MW-18	104.05	---	3.12	---	---	100.93	100.93	---	---
3/7/2006	MW-18	104.05	---	3.41	---	---	100.64	100.64	---	---
5/18/2006	MW-18	104.05	---	3.12	---	---	100.93	100.93	---	---
6/28/2006	MW-18	104.05	---	2.96	---	---	101.09	101.09	---	---
8/16/2006	MW-18	104.05	---	3.11	---	---	100.94	100.94	---	---
9/29/2006	MW-18	104.05	---	3.15	---	---	100.90	100.90	---	---
10/20/2006	MW-18	104.05	---	3.04	---	---	101.01	101.01	---	---
11/22/2006	MW-18	104.05	---	3.04	---	---	101.01	101.01	---	---
12/15/2006	MW-18	104.05	---	3.57	---	---	100.48	100.48	---	---
1/23/2007	MW-18	104.05	---	3.64	---	---	100.41	100.41	---	---
2/2/2007	MW-18	104.05	---	4.04	---	---	100.01	100.01	---	---
3/5/2007	MW-18	104.05	---	3.24	---	---	100.81	100.81	---	---
5/1/2007	MW-18	104.05	---	2.73	---	---	101.32	101.32	---	---
6/22/2007	MW-18	104.05	---	3.32	---	---	100.73	100.73	---	---
6/26/2007	MW-18	104.05	---	3.47	---	---	100.58	100.58	---	---
7/6/2007	MW-18	104.05	---	3.43	---	---	100.62	100.62	---	---
8/1/2007	MW-18	104.05	---	2.98	---	---	101.07	101.07	---	---
8/7/2007	MW-18	104.05	---	3.13	---	---	100.92	100.92	---	---
9/14/2007	MW-18	104.05	---	NG	---	---	---	---	---	---
10/8/2007	MW-18	104.05	---	4.11	---	---	99.94	99.94	---	---
11/20/2007	MW-18	104.05	---	3.69	---	---	100.36	100.36	---	---
12/26/2007	MW-18	104.05	---	3.21	---	---	100.84	100.84	---	---
1/2/2008	MW-18	104.05	---	3.10	---	---	100.95	100.95	---	---
3/5/2008	MW-18	104.05	---	3.17	---	---	100.88	100.88	---	---
4/23/2008	MW-18	104.05	---	3.63	---	---	100.42	100.42	---	---
5/12/2008	MW-18	104.05	---	3.17	---	---	100.88	100.88	---	---
6/27/2008	MW-18	104.05	---	3.17	---	---	100.88	100.88	---	---
8/5/2008	MW-18	104.05	---	3.35	---	---	100.70	100.70	---	---
9/10/2008	MW-18	104.05	---	3.06	---	---	100.99	100.99	---	---
10/27/2008	MW-18	104.05	---	3.54	---	---	100.51	100.51	---	---
11/4/2008	MW-18	104.05	---	3.45	---	---	100.60	100.60	---	---
1/5/2009	MW-18	104.05	---	3.30	---	---	100.75	100.75	---	---
2/27/2009	MW-18	104.05	---	4.28	---	---	99.77	99.77	---	---
3/9/2009	MW-18	104.05	---	4.21	---	---	99.84	99.84	---	---
4/20/2009	MW-18	104.05	---	3.58	---	---	100.47	100.47	---	---
4/29/2009	MW-18	104.05	---	3.31	---	---	100.74	100.74	---	---
5/6/2009	MW-18	104.05	---	3.24	---	---	100.81	100.81	---	---
6/2/2009	MW-18	104.05	---	3.64	---	---	100.41	100.41	---	---
7/6/2009	MW-18	104.05	---	2.87	---	---	101.18	101.18	---	---
8/14/2009	MW-18	104.05	---	3.14	---	---	100.91	100.91	---	---
9/28/2009	MW-18	104.05	---	3.62	---	---	100.43	100.43	---	---
10/13/2009	MW-18	104.05	---	3.69	---	---	100.36	100.36	---	---
11/23/2009	MW-18	104.05	---	3.34	---	---	100.71	100.71	---	---
12/2/2009	MW-18	104.05	---	3.63	---	---	100.42	100.42	---	---
1/12/2010	MW-18	104.05	---	3.56	---	---	100.49	100.49	---	---
2/2/2010	MW-18	104.05	---	3.43	---	---	100.62	100.62	---	---
3/2/2010	MW-18	104.05	---	2.26	---	---	101.79	101.79	---	---
3/15/2010	MW-18	104.05	---	1.61	---	---	102.44	102.44	---	---
4/15/2010	MW-18	104.05	---	3.01	---	---	101.04	101.04	---	---
4/22/2010	MW-18	104.05	---	3.06	---	---	100.99	100.99	---	---
5/3/2010	MW-18	104.05	---	2.12	---	---	101.93	101.93	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-19	104.20	---	3.10	---	---	101.10	101.10	---	---
2/21/2006	MW-19	104.20	---	3.61	---	---	100.59	100.59	---	---
3/7/2006	MW-19	104.20	---	4.29	---	---	99.91	99.91	---	---
5/18/2006	MW-19	104.20	---	3.69	---	---	100.51	100.51	---	---
6/28/2006	MW-19	104.20	---	3.53	---	---	100.67	100.67	---	---
8/16/2006	MW-19	104.20	3.80	3.81	0.01	100.40	100.39	100.40	---	---
9/29/2006	MW-19	104.20	---	3.70	---	---	100.50	100.50	---	---
10/20/2006	MW-19	104.20	---	3.53	---	---	100.67	100.67	---	---
11/22/2006	MW-19	104.20	---	3.58	---	---	100.62	100.62	---	---
12/15/2006	MW-19	104.20	---	4.36	---	---	99.84	99.84	---	---
1/23/2007	MW-19	104.20	---	4.64	---	---	99.56	99.56	---	---
2/2/2007	MW-19	104.20	---	4.73	---	---	99.47	99.47	---	---
3/5/2007	MW-19	104.20	---	4.27	---	---	99.93	99.93	---	---
5/1/2007	MW-19	104.20	---	3.29	---	---	100.91	100.91	---	---
6/22/2007	MW-19	104.20	---	3.99	---	---	100.21	100.21	---	---
6/26/2007	MW-19	104.20	---	4.29	---	---	99.91	99.91	---	---
7/6/2007	MW-19	104.20	---	4.24	---	---	99.96	99.96	---	---
8/1/2007	MW-19	104.20	---	3.55	---	---	100.65	100.65	---	---
8/7/2007	MW-19	104.20	---	3.71	---	---	100.49	100.49	---	---
9/14/2007	MW-19	104.20	---	NG	---	---	---	---	---	---
10/8/2007	MW-19	104.20	4.56	4.61	0.05	99.64	99.59	99.63	---	---
11/20/2007	MW-19	104.20	---	4.42	---	---	99.78	99.78	---	---
12/26/2007	MW-19	104.20	---	3.85	---	---	100.35	100.35	---	---
12/26/2007	MW-19	104.20	---	NG	---	---	---	---	---	---
3/5/2008	MW-19	104.20	---	3.59	---	---	100.61	100.61	---	---
4/23/2008	MW-19	104.20	---	4.30	---	---	99.90	99.90	---	---
5/12/2008	MW-19	104.20	---	3.57	---	---	100.63	100.63	---	---
6/27/2008	MW-19	104.20	---	3.63	---	---	100.57	100.57	---	---
8/5/2008	MW-19	104.20	---	3.39	---	---	100.81	100.81	---	---
9/10/2008	MW-19	104.20	---	3.59	---	---	100.61	100.61	---	---
10/27/2008	MW-19	104.20	---	3.98	---	---	100.22	100.22	---	---
11/4/2008	MW-19	104.20	---	4.38	---	---	99.82	99.82	---	---
1/5/2009	MW-19	104.20	---	3.80	---	---	100.40	100.40	---	---
2/27/2009	MW-19	104.20	---	4.91	---	---	99.29	99.29	---	---
3/9/2009	MW-19	104.20	---	4.69	---	---	99.51	99.51	---	---
4/20/2009	MW-19	104.20	---	4.29	---	---	99.91	99.91	---	---
4/29/2009	MW-19	104.20	---	3.98	---	---	100.22	100.22	---	---
5/6/2009	MW-19	104.20	---	3.69	---	---	100.51	100.51	---	---
6/2/2009	MW-19	104.20	---	4.25	---	---	99.95	99.95	---	---
7/6/2009	MW-19	104.20	---	3.28	---	---	100.92	100.92	---	---
8/14/2009	MW-19	104.20	---	3.49	---	---	100.71	100.71	---	---
9/28/2009	MW-19	104.20	---	4.09	---	---	100.11	100.11	---	---
10/13/2009	MW-19	104.20	---	4.33	---	---	99.87	99.87	---	---
11/23/2009	MW-19	104.20	---	3.76	---	---	100.44	100.44	---	---
12/2/2009	MW-19	104.20	---	4.36	---	---	99.84	99.84	---	---
1/12/2010	MW-19	104.20	---	4.29	---	---	99.91	99.91	---	---
2/2/2010	MW-19	104.20	---	4.34	---	---	99.86	99.86	---	---
3/2/2010	MW-19	104.20	---	2.72	---	---	101.48	101.48	---	---
3/15/2010	MW-19	104.20	---	1.92	---	---	102.28	102.28	---	---
4/15/2010	MW-19	104.20	---	3.57	---	---	100.63	100.63	---	---
4/22/2010	MW-19	104.20	---	3.58	---	---	100.62	100.62	---	---
5/3/2010	MW-19	104.20	---	2.98	---	---	101.22	101.22	---	---

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Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-20	103.90	---	2.54	---	---	101.36	101.36	---	---
2/21/2006	MW-20	103.90	---	2.80	---	---	101.10	101.10	---	---
3/7/2006	MW-20	103.90	---	3.14	---	---	100.76	100.76	---	---
5/18/2006	MW-20	103.90	---	2.93	---	---	100.97	100.97	---	---
6/28/2006	MW-20	103.90	---	2.69	---	---	101.21	101.21	---	---
8/16/2006	MW-20	103.90	---	NG	---	---	---	---	---	---
9/29/2006	MW-20	103.90	---	2.87	---	---	101.03	101.03	---	---
10/20/2006	MW-20	103.90	---	2.55	---	---	101.35	101.35	---	---
11/22/2006	MW-20	103.90	---	2.79	---	---	101.11	101.11	---	---
12/15/2006	MW-20	103.90	---	3.10	---	---	100.80	100.80	---	---
2/2/2007	MW-20	103.90	---	3.46	---	---	100.44	100.44	---	---
3/5/2007	MW-20	103.90	---	3.24	---	---	100.66	100.66	---	---
5/1/2007	MW-20	103.90	2.55	2.56	0.01	101.35	101.34	101.35	---	---
6/22/2007	MW-20	103.90	---	3.08	---	---	100.82	100.82	---	---
6/26/2007	MW-20	103.90	---	3.22	---	---	100.68	100.68	---	---
7/6/2007	MW-20	103.90	---	3.38	---	---	100.52	100.52	---	---
8/1/2007	MW-20	103.90	---	2.89	---	---	101.01	101.01	---	---
8/7/2007	MW-20	103.90	---	2.99	---	---	100.91	100.91	---	---
9/14/2007	MW-20	103.90	---	2.36	---	---	101.54	101.54	---	---
10/8/2007	MW-20	103.90	---	3.65	---	---	100.25	100.25	---	---
11/20/2007	MW-20	103.90	---	3.59	---	---	100.31	100.31	---	---
12/26/2007	MW-20	103.90	---	3.20	---	---	100.70	100.70	---	---
1/2/2008	MW-20	103.90	---	3.05	---	---	100.85	100.85	---	---
3/5/2008	MW-20	103.90	---	NG	---	---	---	---	---	---
4/23/2008	MW-20	103.90	---	3.34	---	---	100.56	100.56	---	---
5/12/2008	MW-20	103.90	---	3.10	---	---	100.80	100.80	---	---
6/27/2008	MW-20	103.90	---	3.10	---	---	100.80	100.80	---	---
8/5/2008	MW-20	103.90	---	3.33	---	---	100.57	100.57	---	---
9/10/2008	MW-20	103.90	---	3.39	---	---	100.51	100.51	---	---
10/27/2008	MW-20	103.90	---	3.25	---	---	100.65	100.65	---	---
11/4/2008	MW-20	103.90	---	3.35	---	---	100.55	100.55	---	---
1/5/2009	MW-20	103.90	---	3.15	---	---	100.75	100.75	---	---
2/27/2009	MW-20	103.90	---	3.76	---	---	100.14	100.14	---	---
3/9/2009	MW-20	103.90	---	3.71	---	---	100.19	100.19	---	---
4/20/2009	MW-20	103.90	---	3.42	---	---	100.48	100.48	---	---
4/29/2009	MW-20	103.90	---	3.36	---	---	100.54	100.54	---	---
5/6/2009	MW-20	103.90	---	3.09	---	---	100.81	100.81	---	---
6/2/2009	MW-20	103.90	---	3.29	---	---	100.61	100.61	---	---
7/6/2009	MW-20	103.90	---	2.73	---	---	101.17	101.17	---	---
8/14/2009	MW-20	103.90	---	3.03	---	---	100.87	100.87	---	---
9/28/2009	MW-20	103.90	---	3.38	---	---	100.52	100.52	---	---
10/13/2009	MW-20	103.90	---	3.49	---	---	100.41	100.41	---	---
11/23/2009	MW-20	103.90	---	3.24	---	---	100.66	100.66	---	---
12/2/2009	MW-20	103.90	---	3.44	---	---	100.46	100.46	---	---
1/12/2010	MW-20	103.90	---	3.24	---	---	100.66	100.66	---	---
2/2/2010	MW-20	103.90	---	3.35	---	---	100.55	100.55	---	---
3/2/2010	MW-20	103.90	---	2.18	---	---	101.72	101.72	---	---
3/15/2010	MW-20	103.90	---	1.68	---	---	102.22	102.22	---	---
4/15/2010	MW-20	103.90	---	2.75	---	---	101.15	101.15	---	---
4/22/2010	MW-20	103.90	---	2.76	---	---	101.14	101.14	---	---
5/3/2010	MW-20	103.90	---	2.61	---	---	101.29	101.29	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-21	104.63	---	4.93	---	---	99.70	99.70	---	---
2/21/2006	MW-21	104.63	---	5.28	---	---	99.35	99.35	---	---
3/7/2006	MW-21	104.63	---	5.17	---	---	99.46	99.46	---	---
5/18/2006	MW-21	104.63	---	4.94	---	---	99.69	99.69	---	---
6/28/2006	MW-21	104.63	---	4.92	---	---	99.71	99.71	---	---
8/16/2006	MW-21	104.63	---	5.11	---	---	99.52	99.52	---	---
9/29/2006	MW-21	104.63	---	4.99	---	---	99.64	99.64	---	---
10/20/2006	MW-21	104.63	---	3.71	---	---	100.92	100.92	---	---
11/22/2006	MW-21	104.63	---	4.80	---	---	99.83	99.83	---	---
12/15/2006	MW-21	104.63	---	5.20	---	---	99.43	99.43	---	---
1/23/2007	MW-21	104.63	---	5.03	---	---	99.60	99.60	---	---
2/2/2007	MW-21	104.63	---	3.25	---	---	101.38	101.38	---	---
3/5/2007	MW-21	104.63	---	4.84	---	---	99.79	99.79	---	---
5/1/2007	MW-21	104.63	---	4.91	---	---	99.72	99.72	---	---
6/22/2007	MW-21	104.63	---	5.15	---	---	99.48	99.48	---	---
6/26/2007	MW-21	104.63	---	5.31	---	---	99.32	99.32	---	---
7/6/2007	MW-21	104.63	---	5.09	---	---	99.54	99.54	---	---
8/1/2007	MW-21	104.63	---	4.89	---	---	99.74	99.74	---	---
8/7/2007	MW-21	104.63	---	5.05	---	---	99.58	99.58	---	---
9/14/2007	MW-21	104.63	---	5.04	---	---	99.59	99.59	---	---
10/8/2007	MW-21	104.63	---	4.15	---	---	100.48	100.48	---	---
11/20/2007	MW-21	104.63	---	5.02	---	---	99.61	99.61	---	---
12/26/2007	MW-21	104.63	---	4.71	---	---	99.92	99.92	---	---
1/2/2008	MW-21	104.63	---	5.05	---	---	99.58	99.58	---	---
3/5/2008	MW-21	104.63	---	4.99	---	---	99.64	99.64	---	---
4/23/2008	MW-21	104.63	---	5.09	---	---	99.54	99.54	---	---
5/12/2008	MW-21	104.63	---	4.88	---	---	99.75	99.75	---	---
6/27/2008	MW-21	104.63	---	5.08	---	---	99.55	99.55	---	---
8/5/2008	MW-21	104.63	---	4.98	---	---	99.65	99.65	---	---
9/10/2008	MW-21	104.63	---	4.97	---	---	99.66	99.66	---	---
10/21/2008	MW-21	104.63	---	NG	---	---	---	---	---	Abandoned
3/2/2010	MW-21R	---	---	2.96	---	---	---	---	---	---
3/15/2010	MW-21R	---	---	2.49	---	---	---	---	---	---
4/15/2010	MW-21R	---	---	3.95	---	---	---	---	---	---
4/22/2010	MW-21R	---	---	3.89	---	---	---	---	---	---
5/3/2010	MW-21R	---	---	3.29	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-22	104.57	---	4.54	---	---	100.03	100.03	---	---
2/21/2006	MW-22	104.57	---	5.01	---	---	99.56	99.56	---	---
3/7/2006	MW-22	104.57	---	5.18	---	---	99.39	99.39	---	---
5/18/2006	MW-22	104.57	---	4.67	---	---	99.90	99.90	---	---
6/28/2006	MW-22	104.57	---	4.66	---	---	99.91	99.91	---	---
8/16/2006	MW-22	104.57	---	4.91	---	---	99.66	99.66	---	---
9/29/2006	MW-22	104.57	---	4.82	---	---	99.75	99.75	---	---
10/20/2006	MW-22	104.57	---	3.97	---	---	100.60	100.60	---	---
11/22/2006	MW-22	104.57	---	4.24	---	---	100.33	100.33	---	---
12/15/2006	MW-22	104.57	---	5.17	---	---	99.40	99.40	---	---
1/23/2007	MW-22	104.57	---	4.91	---	---	99.66	99.66	---	---
2/2/2007	MW-22	104.57	---	4.41	---	---	100.16	100.16	---	---
3/5/2007	MW-22	104.57	---	4.02	---	---	100.55	100.55	---	---
5/1/2007	MW-22	104.57	---	4.70	---	---	99.87	99.87	---	---
6/22/2007	MW-22	104.57	---	4.99	---	---	99.58	99.58	---	---
6/26/2007	MW-22	104.57	---	5.14	---	---	99.43	99.43	---	---
7/6/2007	MW-22	104.57	---	4.71	---	---	99.86	99.86	---	---
8/1/2007	MW-22	104.57	---	4.59	---	---	99.98	99.98	---	---
8/7/2007	MW-22	104.57	---	4.72	---	---	99.85	99.85	---	---
9/14/2007	MW-22	104.57	---	4.79	---	---	99.78	99.78	---	---
10/8/2007	MW-22	104.57	---	4.54	---	---	100.03	100.03	---	---
11/20/2007	MW-22	104.57	---	4.81	---	---	99.76	99.76	---	---
12/26/2007	MW-22	104.57	---	4.71	---	---	99.86	99.86	---	---
1/2/2008	MW-22	104.57	---	4.85	---	---	99.72	99.72	---	---
3/5/2008	MW-22	104.57	---	4.75	---	---	99.82	99.82	---	---
4/23/2008	MW-22	104.57	---	5.03	---	---	99.54	99.54	---	---
5/12/2008	MW-22	104.57	---	4.05	---	---	100.52	100.52	---	---
6/27/2008	MW-22	104.57	---	5.02	---	---	99.55	99.55	---	---
8/5/2008	MW-22	104.57	---	4.75	---	---	99.82	99.82	---	---
9/10/2008	MW-22	104.57	---	4.65	---	---	99.92	99.92	---	---
10/27/2008	MW-22	104.57	---	NG	---	---	---	---	---	Abandoned
3/2/2010	MW-22R	---	---	2.81	---	---	---	---	---	---
3/15/2010	MW-22R	---	---	2.53	---	---	---	---	---	---
4/15/2010	MW-22R	---	---	4.06	---	---	---	---	---	---
4/22/2010	MW-22R	---	---	3.92	---	---	---	---	---	---
5/3/2010	MW-22R	---	---	3.10	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft.)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-23	105.33	---	3.74	---	---	101.59	101.59	---	---
2/21/2006	MW-23	105.33	---	3.74	---	---	101.59	101.59	---	---
3/7/2006	MW-23	105.33	---	4.10	---	---	101.23	101.23	---	---
5/18/2006	MW-23	105.33	---	3.49	---	---	101.84	101.84	---	---
6/28/2006	MW-23	105.33	---	3.60	---	---	101.73	101.73	---	---
8/16/2006	MW-23	105.33	---	3.82	---	---	101.51	101.51	---	---
9/29/2006	MW-23	105.33	---	3.95	---	---	101.38	101.38	---	---
10/20/2006	MW-23	105.33	---	3.53	---	---	101.80	101.80	---	---
11/22/2006	MW-23	105.33	---	3.82	---	---	101.51	101.51	---	---
12/15/2006	MW-23	105.33	---	4.18	---	---	101.15	101.15	---	---
1/23/2007	MW-23	105.33	---	4.18	---	---	101.15	101.15	---	---
2/2/2007	MW-23	105.33	---	4.44	---	---	100.89	100.89	---	---
3/5/2007	MW-23	105.33	---	NG	---	---	---	---	---	---
5/1/2007	MW-23	105.33	---	3.54	---	---	101.79	101.79	---	---
6/22/2007	MW-23	105.33	---	4.11	---	---	101.22	101.22	---	---
6/26/2007	MW-23	105.33	---	4.19	---	---	101.14	101.14	---	---
7/6/2007	MW-23	105.33	---	3.72	---	---	101.61	101.61	---	---
8/1/2007	MW-23	105.33	---	3.71	---	---	101.62	101.62	---	---
8/7/2007	MW-23	105.33	---	3.89	---	---	101.44	101.44	---	---
9/14/2007	MW-23	105.33	---	4.19	---	---	101.14	101.14	---	---
10/8/2007	MW-23	105.33	---	4.52	---	---	100.81	100.81	---	---
11/20/2007	MW-23	105.33	---	4.12	---	---	101.21	101.21	---	---
12/26/2007	MW-23	105.33	---	3.69	---	---	101.64	101.64	---	---
1/2/2008	MW-23	105.33	---	3.57	---	---	101.76	101.76	---	---
3/5/2008	MW-23	105.33	---	3.82	---	---	101.51	101.51	---	---
4/23/2008	MW-23	105.33	---	4.30	---	---	101.03	101.03	---	---
5/12/2008	MW-23	105.33	---	3.73	---	---	101.60	101.60	---	---
6/27/2008	MW-23	105.33	3.99	4.00	0.01	101.34	101.33	101.34	---	---
8/5/2008	MW-23	105.33	---	3.99	---	---	101.34	101.34	---	---
9/10/2008	MW-23	105.33	---	3.39	---	---	101.94	101.94	---	---
10/27/2008	MW-23	105.33	---	3.92	---	---	101.41	101.41	---	---
11/4/2008	MW-23	105.33	---	3.89	---	---	101.44	101.44	---	---
1/5/2009	MW-23	105.33	---	3.98	---	---	101.35	101.35	---	---
2/27/2009	MW-23	105.33	---	4.45	---	---	100.88	100.88	---	---
3/9/2009	MW-23	105.33	---	4.49	---	---	100.84	100.84	---	---
4/29/2009	MW-23	105.33	---	3.23	---	---	102.10	102.10	---	---
5/6/2009	MW-23	105.33	---	3.50	---	---	101.83	101.83	---	---
6/2/2009	MW-23	105.33	---	4.34	---	---	100.99	100.99	---	---
7/6/2009	MW-23	105.33	---	3.64	---	---	101.69	101.69	---	---
8/14/2009	MW-23	105.33	---	3.97	---	---	101.36	101.36	---	---
9/28/2009	MW-23	105.33	---	3.93	---	---	101.40	101.40	---	---
10/13/2009	MW-23	105.33	---	4.18	---	---	101.15	101.15	---	---
11/23/2009	MW-23	105.33	---	3.94	---	---	101.39	101.39	---	---
12/2/2009	MW-23	105.33	---	4.22	---	---	101.11	101.11	---	---
1/12/2010	MW-23	105.33	---	4.16	---	---	101.17	101.17	---	---
2/2/2010	MW-23	105.33	---	4.04	---	---	101.29	101.29	---	---
3/2/2010	MW-23	105.33	---	2.18	---	---	103.15	103.15	---	---
3/15/2010	MW-23	105.33	---	1.89	---	---	103.44	103.44	---	---
4/15/2010	MW-23	105.33	---	3.98	---	---	101.35	101.35	---	---
4/22/2010	MW-23	105.33	---	4.10	---	---	101.23	101.23	---	---
5/3/2010	MW-23	105.33	---	3.65	---	---	101.68	101.68	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603
25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft.)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-24	105.09	---	3.30	---	---	101.79	101.79	---	---
2/21/2006	MW-24	105.09	---	3.69	---	---	101.40	101.40	---	---
3/7/2006	MW-24	105.09	---	3.99	---	---	101.10	101.10	---	---
5/18/2006	MW-24	105.09	---	3.65	---	---	101.44	101.44	---	---
6/28/2006	MW-24	105.09	---	3.64	---	---	101.45	101.45	---	---
8/16/2006	MW-24	105.09	---	3.79	---	---	101.30	101.30	---	---
9/29/2006	MW-24	105.09	---	3.91	---	---	101.18	101.18	---	---
10/20/2006	MW-24	105.09	---	3.66	---	---	101.43	101.43	---	---
11/22/2006	MW-24	105.09	---	3.76	---	---	101.33	101.33	---	---
12/15/2006	MW-24	105.09	---	4.10	---	---	100.99	100.99	---	---
1/23/2007	MW-24	105.09	---	4.11	---	---	100.98	100.98	---	---
2/2/2007	MW-24	105.09	---	4.31	---	---	100.78	100.78	---	---
3/5/2007	MW-24	105.09	---	3.46	---	---	101.63	101.63	---	---
5/1/2007	MW-24	105.09	---	3.50	---	---	101.59	101.59	---	---
6/22/2007	MW-24	105.09	---	4.05	---	---	101.04	101.04	---	---
6/26/2007	MW-24	105.09	---	4.13	---	---	100.96	100.96	---	---
7/6/2007	MW-24	105.09	---	3.92	---	---	101.17	101.17	---	---
8/1/2007	MW-24	105.09	---	3.72	---	---	101.37	101.37	---	---
8/7/2007	MW-24	105.09	---	3.66	---	---	101.23	101.23	---	---
9/14/2007	MW-24	105.09	---	4.16	---	---	100.93	100.93	---	---
10/8/2007	MW-24	105.09	---	4.45	---	---	100.64	100.64	---	---
11/20/2007	MW-24	105.09	---	4.11	---	---	100.98	100.98	---	---
12/26/2007	MW-24	105.09	---	3.74	---	---	101.35	101.35	---	---
1/2/2008	MW-24	105.09	---	3.62	---	---	101.47	101.47	---	---
3/5/2008	MW-24	105.09	---	3.79	---	---	101.30	101.30	---	---
4/23/2008	MW-24	105.09	---	4.21	---	---	100.88	100.88	---	---
5/12/2008	MW-24	105.09	---	3.80	---	---	101.29	101.29	---	---
6/27/2008	MW-24	105.09	---	3.93	---	---	101.16	101.16	---	---
8/5/2008	MW-24	105.09	---	4.00	---	---	101.09	101.09	---	---
9/10/2008	MW-24	105.09	---	3.42	---	---	101.67	101.67	---	---
10/27/2008	MW-24	105.09	---	4.00	---	---	101.09	101.09	---	---
11/4/2008	MW-24	105.09	---	3.96	---	---	101.13	101.13	---	---
1/5/2009	MW-24	105.09	---	3.90	---	---	101.19	101.19	---	---
2/27/2009	MW-24	105.09	---	4.35	---	---	100.74	100.74	---	---
3/9/2009	MW-24	105.09	---	4.43	---	---	100.66	100.66	---	---
4/20/2009	MW-24	105.09	---	3.99	---	---	101.10	101.10	---	---
4/29/2009	MW-24	105.09	---	3.84	---	---	101.25	101.25	---	---
5/6/2009	MW-24	105.09	---	3.61	---	---	101.48	101.48	---	---
6/2/2009	MW-24	105.09	---	4.18	---	---	100.91	100.91	---	---
7/6/2009	MW-24	105.09	---	3.60	---	---	101.49	101.49	---	---
8/14/2009	MW-24	105.09	---	3.87	---	---	101.22	101.22	---	---
9/28/2009	MW-24	105.09	---	3.92	---	---	101.17	101.17	---	---
10/13/2009	MW-24	105.09	---	4.14	---	---	100.95	100.95	---	---
11/23/2009	MW-24	105.09	---	3.88	---	---	101.21	101.21	---	---
12/2/2009	MW-24	105.09	---	4.11	---	---	100.98	100.98	---	---
1/12/2010	MW-24	105.09	---	4.02	---	---	101.07	101.07	---	---
2/2/2010	MW-24	105.09	---	3.95	---	---	101.14	101.14	---	---
3/2/2010	MW-24	105.09	---	3.14	---	---	101.95	101.95	---	---
3/15/2010	MW-24	105.09	---	2.69	---	---	102.40	102.40	---	---
4/15/2010	MW-24	105.09	---	3.82	---	---	101.27	101.27	---	---
4/22/2010	MW-24	105.09	---	3.91	---	---	101.18	101.18	---	---
5/3/2010	MW-24	105.09	---	3.66	---	---	101.43	101.43	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paldge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft.)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-25	104.10	---	2.44	---	---	101.66	101.66	---	---
2/21/2006	MW-25	104.10	---	2.84	---	---	101.26	101.26	---	---
3/7/2006	MW-25	104.10	---	3.14	---	---	100.96	100.96	---	---
5/18/2006	MW-25	104.10	---	2.81	---	---	101.29	101.29	---	---
6/28/2006	MW-25	104.10	---	2.76	---	---	101.34	101.34	---	---
8/16/2006	MW-25	104.10	---	2.91	---	---	101.19	101.19	---	---
9/29/2006	MW-25	104.10	---	3.00	---	---	101.10	101.10	---	---
10/20/2006	MW-25	104.10	---	2.68	---	---	101.42	101.42	---	---
11/22/2006	MW-25	104.10	---	2.87	---	---	101.23	101.23	---	---
12/15/2006	MW-25	104.10	---	3.23	---	---	100.87	100.87	---	---
1/23/2007	MW-25	104.10	---	3.26	---	---	100.84	100.84	---	---
2/2/2007	MW-25	104.10	---	3.47	---	---	100.63	100.63	---	---
3/5/2007	MW-25	104.10	---	2.68	---	---	101.42	101.42	---	---
5/1/2007	MW-25	104.10	---	2.58	---	---	101.52	101.52	---	---
6/22/2007	MW-25	104.10	---	3.11	---	---	100.99	100.99	---	---
6/26/2007	MW-25	104.10	---	3.19	---	---	100.91	100.91	---	---
7/6/2007	MW-25	104.10	---	3.01	---	---	101.09	101.09	---	---
8/1/2007	MW-25	104.10	---	2.79	---	---	101.31	101.31	---	---
8/7/2007	MW-25	104.10	---	2.96	---	---	101.14	101.14	---	---
9/14/2007	MW-25	104.10	---	3.25	---	---	100.85	100.85	---	---
10/8/2007	MW-25	104.10	---	3.55	---	---	100.55	100.55	---	---
11/20/2007	MW-25	104.10	---	3.23	---	---	100.87	100.87	---	---
12/26/2007	MW-25	104.10	---	2.88	---	---	101.22	101.22	---	---
1/2/2008	MW-25	104.10	---	2.76	---	---	101.34	101.34	---	---
3/5/2008	MW-25	104.10	---	2.79	---	---	101.31	101.31	---	---
4/23/2008	MW-25	104.10	---	3.30	---	---	100.80	100.80	---	---
5/12/2008	MW-25	104.10	---	2.80	---	---	101.30	101.30	---	---
6/27/2008	MW-25	104.10	---	3.00	---	---	101.10	101.10	---	---
8/5/2008	MW-25	104.10	---	3.10	---	---	101.00	101.00	---	---
9/10/2008	MW-25	104.10	---	2.59	---	---	101.51	101.51	---	---
10/27/2008	MW-25	104.10	---	2.74	---	---	101.36	101.36	---	---
11/4/2008	MW-25	104.10	---	3.06	---	---	101.04	101.04	---	---
1/5/2009	MW-25	104.10	---	3.00	---	---	101.10	101.10	---	---
2/27/2009	MW-25	104.10	---	3.54	---	---	100.56	100.56	---	---
3/9/2009	MW-25	104.10	---	3.62	---	---	100.48	100.48	---	---
4/20/2009	MW-25	104.10	---	3.12	---	---	100.98	100.98	---	---
4/29/2009	MW-25	104.10	---	3.01	---	---	101.09	101.09	---	---
5/6/2009	MW-25	104.10	---	2.73	---	---	101.37	101.37	---	---
6/2/2009	MW-25	104.10	---	3.29	---	---	100.81	100.81	---	---
7/6/2009	MW-25	104.10	---	2.75	---	---	101.35	101.35	---	---
8/14/2009	MW-25	104.10	---	2.96	---	---	101.14	101.14	---	---
9/28/2009	MW-25	104.10	---	3.02	---	---	101.08	101.08	---	---
10/13/2009	MW-25	104.10	---	3.26	---	---	100.84	100.84	---	---
11/23/2009	MW-25	104.10	---	2.97	---	---	101.13	101.13	---	---
12/2/2009	MW-25	104.10	---	3.21	---	---	100.89	100.89	---	---
1/12/2010	MW-25	104.10	---	3.12	---	---	100.98	100.98	---	---
2/2/2010	MW-25	104.10	---	3.06	---	---	101.04	101.04	---	---
3/2/2010	MW-25	104.10	---	2.21	---	---	101.89	101.89	---	---
3/15/2010	MW-25	104.10	---	1.62	---	---	102.48	102.48	---	---
4/15/2010	MW-25	104.10	---	2.89	---	---	101.21	101.21	---	---
4/22/2010	MW-25	104.10	---	2.93	---	---	101.17	101.17	---	---
5/3/2010	MW-25	104.10	---	NG	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-26	---	---	3.22	---	---	---	---	---	---
2/21/2006	MW-26	---	---	3.95	---	---	---	---	---	---
3/7/2006	MW-26	---	---	4.17	---	---	---	---	---	---
5/18/2006	MW-26	---	---	3.61	---	---	---	---	---	---
6/28/2006	MW-26	---	3.55	3.58	0.03	---	---	---	---	---
8/16/2006	MW-26	---	3.78	3.79	0.01	---	---	---	---	---
9/29/2006	MW-26	---	3.63	3.65	0.02	---	---	---	---	---
10/20/2006	MW-26	---	3.53	3.55	0.02	---	---	---	---	---
11/21/2006	MW-26	---	3.70	3.72	0.02	---	---	---	---	---
12/15/2006	MW-26	---	4.21	4.23	0.02	---	---	---	---	---
1/23/2007	MW-26	---	---	4.41	---	---	---	---	---	---
2/2/2007	MW-26	---	---	4.58	---	---	---	---	---	---
3/5/2007	MW-26	---	---	4.09	---	---	---	---	---	---
5/1/2007	MW-26	---	2.56	2.57	0.01	---	---	---	---	---
6/22/2007	MW-26	---	3.89	3.90	0.01	---	---	---	---	---
6/26/2007	MW-26	---	4.16	4.22	0.06	---	---	---	---	---
7/6/2007	MW-26	---	4.03	4.06	0.03	---	---	---	---	---
8/1/2007	MW-26	---	3.56	3.59	0.03	---	---	---	---	---
8/7/2007	MW-26	---	---	NG	---	---	---	---	---	---
9/14/2007	MW-26	---	---	NG	---	---	---	---	---	---
10/8/2007	MW-26	---	4.41	4.45	0.04	---	---	---	---	---
11/20/2007	MW-26	---	4.29	4.31	0.02	---	---	---	---	---
12/26/2007	MW-26	---	4.06	4.09	0.03	---	---	---	---	---
1/2/2008	MW-26	---	3.79	3.81	0.02	---	---	---	---	---
3/5/2008	MW-26	---	3.79	3.82	0.03	---	---	---	---	---
4/23/2008	MW-26	---	4.10	4.28	0.18	---	---	---	0.25	---
5/12/2008	MW-26	---	3.38	3.43	0.05	---	---	---	---	---
6/27/2008	MW-26	---	3.84	3.86	0.02	---	---	---	---	---
8/5/2008	MW-26	---	3.95	4.01	0.06	---	---	---	---	---
9/10/2008	MW-26	---	3.85	3.86	0.01	---	---	---	---	---
10/27/2008	MW-26	---	3.88	3.89	0.01	---	---	---	---	---
11/4/2008	MW-26	---	4.29	4.31	0.02	---	---	---	---	---
1/5/2009	MW-26	---	4.20	4.28	0.08	---	---	---	---	---
2/27/2009	MW-26	---	---	4.78	---	---	---	---	---	---
3/9/2009	MW-26	---	4.53	4.55	0.02	---	---	---	---	---
4/20/2009	MW-26	---	4.01	4.09	0.08	---	---	---	0.25	---
4/29/2009	MW-26	---	4.29	4.48	0.19	---	---	---	---	---
5/6/2009	MW-26	---	3.80	3.81	0.01	---	---	---	---	---
6/2/2009	MW-26	---	4.11	4.15	0.04	---	---	---	---	---
7/6/2009	MW-26	---	---	3.30	---	---	---	---	---	---
8/14/2009	MW-26	---	3.72	3.76	0.04	---	---	---	---	---
9/28/2009	MW-26	---	3.87	3.89	0.02	---	---	---	---	---
10/13/2009	MW-26	---	4.24	4.26	0.02	---	---	---	---	---
11/23/2009	MW-26	---	2.86	2.87	0.01	---	---	---	---	---
12/2/2009	MW-26	---	4.35	4.37	0.02	---	---	---	---	---
1/12/2010	MW-26	---	4.25	4.27	0.02	---	---	---	---	---
2/2/2010	MW-26	---	4.26	4.27	0.01	---	---	---	---	---
3/2/2010	MW-26	---	2.85	2.86	0.01	---	---	---	---	---
3/15/2010	MW-26	---	---	NG	---	---	---	---	---	Flooded
4/15/2010	MW-26	---	3.68	3.70	0.02	---	---	---	---	---
4/22/2010	MW-26	---	3.71	3.72	0.01	---	---	---	---	---
5/3/2010	MW-26	---	---	NG	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603
25 Pajdge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft.)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-27	102.89	---	1.79	---	---	101.10	101.10	---	---
2/21/2006	MW-27	102.89	---	2.21	---	---	100.68	100.68	---	---
3/7/2006	MW-27	102.89	---	2.44	---	---	100.45	100.45	---	---
5/18/2006	MW-27	102.89	---	1.95	---	---	100.94	100.94	---	---
6/28/2006	MW-27	102.89	---	1.65	---	---	101.24	101.24	---	---
8/16/2006	MW-27	102.89	---	2.10	---	---	100.79	100.79	---	---
9/29/2006	MW-27	102.89	---	2.09	---	---	100.80	100.80	---	---
10/20/2006	MW-27	102.89	---	1.44	---	---	101.45	101.45	---	---
11/22/2006	MW-27	102.89	---	2.01	---	---	100.88	100.88	---	---
12/15/2006	MW-27	102.89	---	2.28	---	---	100.61	100.61	---	---
1/23/2007	MW-27	102.89	---	NG	---	---	---	---	---	---
2/2/2007	MW-27	102.89	---	2.61	---	---	100.28	100.28	---	---
3/5/2007	MW-27	102.89	---	2.27	---	---	100.62	100.62	---	---
5/1/2007	MW-27	102.89	---	1.81	---	---	101.08	101.08	---	---
6/22/2007	MW-27	102.89	---	2.15	---	---	100.74	100.74	---	---
6/26/2007	MW-27	102.89	---	2.31	---	---	100.58	100.58	---	---
7/6/2007	MW-27	102.89	---	1.84	---	---	101.05	101.05	---	---
8/1/2007	MW-27	102.89	---	1.92	---	---	100.97	100.97	---	---
8/7/2007	MW-27	102.89	---	2.11	---	---	100.78	100.78	---	---
9/14/2007	MW-27	102.89	---	2.32	---	---	100.57	100.57	---	---
10/8/2007	MW-27	102.89	---	2.54	---	---	100.35	100.35	---	---
11/20/2007	MW-27	102.89	---	2.48	---	---	100.41	100.41	---	---
12/26/2007	MW-27	102.89	---	2.40	---	---	100.49	100.49	---	---
1/2/2008	MW-27	102.89	---	2.02	---	---	100.87	100.87	---	---
3/5/2008	MW-27	102.89	---	1.96	---	---	100.93	100.93	---	---
4/23/2008	MW-27	102.89	---	2.57	---	---	100.32	100.32	---	---
5/6/2008	MW-27	102.89	---	1.64	---	---	101.25	101.25	---	---
5/12/2008	MW-27	102.89	---	1.74	---	---	101.15	101.15	---	---
6/27/2008	MW-27	102.89	---	2.27	---	---	100.62	100.62	---	---
8/5/2008	MW-27	102.89	---	2.37	---	---	100.52	100.52	---	---
9/10/2008	MW-27	102.89	---	2.38	---	---	100.51	100.51	---	---
10/27/2008	MW-27	102.89	---	NG	---	---	---	---	---	---
11/4/2008	MW-27	102.89	---	2.54	---	---	100.35	100.35	---	---
1/5/2009	MW-27	102.89	---	2.45	---	---	100.44	100.44	---	---
2/27/2009	MW-27	102.89	---	2.89	---	---	100.00	100.00	---	---
3/9/2009	MW-27	102.89	---	2.82	---	---	100.07	100.07	---	---
4/20/2009	MW-27	102.89	---	2.64	---	---	100.25	100.25	---	---
4/29/2009	MW-27	102.89	---	2.60	---	---	100.29	100.29	---	---
6/2/2009	MW-27	102.89	---	2.45	---	---	100.44	100.44	---	---
7/6/2009	MW-27	102.89	---	1.97	---	---	100.92	100.92	---	---
8/14/2009	MW-27	102.89	---	2.26	---	---	100.63	100.63	---	---
9/28/2009	MW-27	102.89	---	1.53	---	---	101.36	101.36	---	---
10/13/2009	MW-27	102.89	---	2.57	---	---	100.32	100.32	---	---
11/23/2009	MW-27	102.89	---	2.34	---	---	100.55	100.55	---	---
12/2/2009	MW-27	102.89	---	2.52	---	---	100.37	100.37	---	---
1/12/2010	MW-27	102.89	---	2.59	---	---	100.30	100.30	---	---
2/2/2010	MW-27	102.89	---	2.66	---	---	100.23	100.23	---	---
3/2/2010	MW-27	102.89	---	1.54	---	---	101.35	101.35	---	---
3/15/2010	MW-27	102.89	---	NG	---	---	---	---	---	Flooded
4/15/2010	MW-27	102.89	---	2.23	---	---	100.66	100.66	---	---
4/22/2010	MW-27	102.89	---	2.13	---	---	100.76	100.76	---	---
5/3/2010	MW-27	102.89	---	0.80	---	---	102.09	102.09	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603
25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft.)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-28	102.57	---	1.17	---	---	101.40	101.40	---	---
2/21/2006	MW-28	102.57	---	1.41	---	---	101.16	101.16	---	---
3/7/2006	MW-28	102.57	---	1.69	---	---	100.88	100.88	---	---
5/18/2006	MW-28	102.57	---	1.34	---	---	101.23	101.23	---	---
6/22/2006	MW-28	102.57	---	1.51	---	---	101.06	101.06	---	---
6/28/2006	MW-28	102.57	---	1.18	---	---	101.39	101.39	---	---
8/16/2006	MW-28	102.57	---	1.41	---	---	101.16	101.16	---	---
9/29/2006	MW-28	102.57	---	1.42	---	---	101.15	101.15	---	---
10/20/2006	MW-28	102.57	---	1.69	---	---	100.88	100.88	---	---
11/22/2006	MW-28	102.57	---	1.34	---	---	101.23	101.23	---	---
12/15/2006	MW-28	102.57	---	1.55	---	---	101.02	101.02	---	---
1/23/2007	MW-28	102.57	---	1.79	---	---	100.78	100.78	---	---
2/2/2007	MW-28	102.57	---	1.93	---	---	100.64	100.64	---	---
3/5/2007	MW-28	102.57	---	1.65	---	---	100.92	100.92	---	---
5/1/2007	MW-28	102.57	---	1.10	---	---	101.47	101.47	---	---
6/26/2007	MW-28	102.57	---	1.62	---	---	100.95	100.95	---	---
7/6/2007	MW-28	102.57	---	1.47	---	---	101.10	101.10	---	---
8/1/2007	MW-28	102.57	---	1.23	---	---	101.34	101.34	---	---
8/7/2007	MW-28	102.57	---	1.35	---	---	101.22	101.22	---	---
9/14/2007	MW-28	102.57	---	1.62	---	---	100.95	100.95	---	---
10/8/2007	MW-28	102.57	---	1.94	---	---	100.63	100.63	---	---
11/20/2007	MW-28	102.57	---	2.01	---	---	100.56	100.56	---	---
12/26/2007	MW-28	102.57	---	1.78	---	---	100.79	100.79	---	---
1/2/2008	MW-28	102.57	---	1.64	---	---	100.93	100.93	---	---
3/5/2008	MW-28	102.57	---	1.61	---	---	100.96	100.96	---	---
4/23/2008	MW-28	102.57	---	1.98	---	---	100.59	100.59	---	---
5/6/2008	MW-28	102.57	---	1.66	---	---	100.91	100.91	---	---
5/12/2008	MW-28	102.57	---	1.65	---	---	100.92	100.92	---	---
6/27/2008	MW-28	102.57	1.10	1.11	0.01	101.47	101.46	101.47	---	---
8/5/2008	MW-28	102.57	---	1.85	---	---	100.72	100.72	---	---
9/10/2008	MW-28	102.57	---	1.89	---	---	100.68	100.68	---	---
10/27/2008	MW-28	102.57	---	1.85	---	---	100.72	100.72	---	---
11/4/2008	MW-28	102.57	---	1.92	---	---	100.65	100.65	---	---
1/5/2009	MW-28	102.57	---	1.68	---	---	100.89	100.89	---	---
2/27/2009	MW-28	102.57	---	2.19	---	---	100.38	100.38	---	---
3/9/2009	MW-28	102.57	---	2.11	---	---	100.46	100.46	---	---
4/20/2009	MW-28	102.57	---	3.01	---	---	99.56	99.56	---	---
4/29/2009	MW-28	102.57	---	1.95	---	---	100.62	100.62	---	---
6/2/2009	MW-28	102.57	---	1.84	---	---	100.73	100.73	---	---
7/6/2009	MW-28	102.57	---	1.28	---	---	101.29	101.29	---	---
8/14/2009	MW-28	102.57	---	1.54	---	---	101.03	101.03	---	---
9/28/2009	MW-28	102.57	---	1.69	---	---	100.88	100.88	---	---
10/13/2009	MW-28	102.57	---	1.89	---	---	100.68	100.68	---	---
11/23/2009	MW-28	102.57	---	1.73	---	---	100.84	100.84	---	---
12/2/2009	MW-28	102.57	---	1.83	---	---	100.74	100.74	---	---
1/12/2010	MW-28	102.57	---	1.64	---	---	100.93	100.93	---	---
2/2/2010	MW-28	102.57	---	1.92	---	---	100.65	100.65	---	---
3/2/2010	MW-28	102.57	---	0.91	---	---	101.66	101.66	---	---
3/15/2010	MW-28	102.57	---	0.53	---	---	102.04	102.04	---	---
4/15/2010	MW-28	102.57	---	1.43	---	---	101.14	101.14	---	---
4/22/2010	MW-28	102.57	---	1.43	---	---	101.14	101.14	---	---
5/3/2010	MW-28	102.57	---	1.26	---	---	101.31	101.31	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-29	102.71	---	1.36	---	---	101.35	101.35	---	---
2/21/2006	MW-29	102.71	---	1.58	---	---	101.13	101.13	---	---
3/7/2006	MW-29	102.71	---	1.86	---	---	100.85	100.85	---	---
5/18/2006	MW-29	102.71	---	1.56	---	---	101.15	101.15	---	---
6/28/2006	MW-29	102.71	---	1.31	---	---	101.40	101.40	---	---
8/16/2006	MW-29	102.71	---	1.60	---	---	101.11	101.11	---	---
9/29/2006	MW-29	102.71	---	1.50	---	---	101.21	101.21	---	---
10/20/2006	MW-29	102.71	---	1.02	---	---	101.69	101.69	---	---
11/22/2006	MW-29	102.71	---	1.50	---	---	101.21	101.21	---	---
12/15/2006	MW-29	102.71	---	1.80	---	---	100.91	100.91	---	---
1/23/2007	MW-29	102.71	---	1.99	---	---	100.72	100.72	---	---
2/2/2007	MW-29	102.71	---	2.12	---	---	100.59	100.59	---	---
3/5/2007	MW-29	102.71	---	1.92	---	---	100.79	100.79	---	---
5/1/2007	MW-29	102.71	---	1.28	---	---	101.43	101.43	---	---
6/22/2007	MW-29	102.71	---	1.71	---	---	101.00	101.00	---	---
6/26/2007	MW-29	102.71	---	1.78	---	---	100.93	100.93	---	---
7/6/2007	MW-29	102.71	---	1.60	---	---	101.11	101.11	---	---
8/1/2007	MW-29	102.71	---	1.46	---	---	101.25	101.25	---	---
8/7/2007	MW-29	102.71	---	1.59	---	---	101.12	101.12	---	---
9/14/2007	MW-29	102.71	---	1.83	---	---	100.88	100.88	---	---
10/8/2007	MW-29	102.71	---	2.12	---	---	100.59	100.59	---	---
11/20/2007	MW-29	102.71	---	NG	---	---	---	---	---	---
12/26/2007	MW-29	102.71	---	1.94	---	---	100.77	100.77	---	---
1/2/2008	MW-29	102.71	---	NG	---	---	---	---	---	---
3/5/2008	MW-29	102.71	---	NG	---	---	---	---	---	---
4/23/2008	MW-29	102.71	---	2.14	---	---	100.57	100.57	---	---
5/12/2008	MW-29	102.71	---	1.84	---	---	100.87	100.87	---	---
6/27/2008	MW-29	102.71	---	NG	---	---	---	---	---	---
8/5/2008	MW-29	102.71	---	1.99	---	---	100.72	100.72	---	---
9/10/2008	MW-29	102.71	---	2.09	---	---	100.62	100.62	---	---
10/27/2008	MW-29	102.71	---	NG	---	---	---	---	---	---
11/4/2008	MW-29	102.71	---	2.19	---	---	100.52	100.52	---	---
1/5/2009	MW-29	102.71	---	1.81	---	---	100.90	100.90	---	---
2/27/2009	MW-29	102.71	---	2.48	---	---	100.23	100.23	---	---
3/9/2009	MW-29	102.71	---	2.38	---	---	100.33	100.33	---	---
4/20/2009	MW-29	102.71	---	2.19	---	---	100.52	100.52	---	---
4/29/2009	MW-29	102.71	---	1.98	---	---	100.73	100.73	---	---
5/6/2009	MW-29	102.71	---	1.86	---	---	100.85	100.85	---	---
6/2/2009	MW-29	102.71	---	1.96	---	---	100.75	100.75	---	---
7/6/2009	MW-29	102.71	---	1.43	---	---	101.28	101.28	---	---
8/14/2009	MW-29	102.71	---	1.72	---	---	100.99	100.99	---	---
9/28/2009	MW-29	102.71	---	2.04	---	---	100.67	100.67	---	---
10/13/2009	MW-29	102.71	---	2.14	---	---	100.57	100.57	---	---
11/23/2009	MW-29	102.71	---	1.96	---	---	100.75	100.75	---	---
12/2/2009	MW-29	102.71	---	2.12	---	---	100.59	100.59	---	---
1/12/2010	MW-29	102.71	---	1.96	---	---	100.75	100.75	---	---
2/2/2010	MW-29	102.71	---	2.12	---	---	100.59	100.59	---	---
3/2/2010	MW-29	102.71	---	1.04	---	---	101.67	101.67	---	---
3/15/2010	MW-29	102.71	---	0.59	---	---	102.12	102.12	---	---
4/15/2010	MW-29	102.71	---	1.53	---	---	101.18	101.18	---	---
4/22/2010	MW-29	102.71	---	NG	---	---	---	---	---	---
5/3/2010	MW-29	102.71	---	1.00	---	---	101.71	101.71	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-30	---	---	1.64	---	---	---	---	---	---
2/21/2006	MW-30	---	---	2.10	---	---	---	---	---	---
3/7/2006	MW-30	---	---	2.34	---	---	---	---	---	---
5/18/2006	MW-30	---	---	2.01	---	---	---	---	---	---
6/28/2006	MW-30	---	---	0.47	---	---	---	---	---	---
8/16/2006	MW-30	---	---	1.98	---	---	---	---	---	---
9/29/2006	MW-30	---	---	1.22	---	---	---	---	---	---
10/20/2006	MW-30	---	---	0.58	---	---	---	---	---	---
11/22/2006	MW-30	---	---	1.76	---	---	---	---	---	---
12/15/2006	MW-30	---	---	1.00	---	---	---	---	---	---
1/23/2007	MW-30	---	---	2.41	---	---	---	---	---	---
2/2/2007	MW-30	---	---	2.54	---	---	---	---	---	---
3/5/2007	MW-30	---	---	2.38	---	---	---	---	---	---
5/1/2007	MW-30	---	---	1.84	---	---	---	---	---	---
6/22/2007	MW-30	---	---	NG	---	---	---	---	---	---
6/26/2007	MW-30	---	---	2.22	---	---	---	---	---	---
7/6/2007	MW-30	---	---	1.60	---	---	---	---	---	---
8/1/2007	MW-30	---	---	1.75	---	---	---	---	---	---
8/7/2007	MW-30	---	---	1.89	---	---	---	---	---	---
9/14/2007	MW-30	---	---	2.18	---	---	---	---	---	---
10/8/2007	MW-30	---	---	2.42	---	---	---	---	---	---
11/20/2007	MW-30	---	---	NG	---	---	---	---	---	---
12/26/2007	MW-30	---	---	2.28	---	---	---	---	---	---
1/2/2008	MW-30	---	---	1.69	---	---	---	---	---	---
3/5/2008	MW-30	---	---	NG	---	---	---	---	---	---
4/23/2008	MW-30	---	---	2.50	---	---	---	---	---	---
5/6/2008	MW-30	---	---	1.81	---	---	---	---	---	---
5/12/2008	MW-30	---	---	NG	---	---	---	---	---	---
6/27/2008	MW-30	---	---	6.65	---	---	---	---	---	---
8/5/2008	MW-30	---	---	2.24	---	---	---	---	---	---
9/10/2008	MW-30	---	---	1.91	---	---	---	---	---	---
10/27/2008	MW-30	---	---	NG	---	---	---	---	---	---
11/4/2008	MW-30	---	---	2.35	---	---	---	---	---	---
1/5/2009	MW-30	---	---	2.38	---	---	---	---	---	---
2/27/2009	MW-30	---	---	3.11	---	---	---	---	---	---
3/9/2009	MW-30	---	---	2.92	---	---	---	---	---	---
4/20/2009	MW-30	---	---	2.61	---	---	---	---	---	---
4/29/2009	MW-30	---	---	2.72	---	---	---	---	---	---
6/2/2009	MW-30	---	---	2.54	---	---	---	---	---	---
7/6/2009	MW-30	---	---	1.88	---	---	---	---	---	---
8/14/2009	MW-30	---	---	2.14	---	---	---	---	---	---
9/28/2009	MW-30	---	---	1.23	---	---	---	---	---	---
10/13/2009	MW-30	---	---	2.43	---	---	---	---	---	---
11/23/2009	MW-30	---	---	2.18	---	---	---	---	---	---
12/2/2009	MW-30	---	---	1.72	---	---	---	---	---	---
1/12/2010	MW-30	---	---	2.56	---	---	---	---	---	---
2/2/2010	MW-30	---	---	2.68	---	---	---	---	---	---
3/2/2010	MW-30	---	---	NG	---	---	---	---	---	Under Water
3/15/2010	MW-30	---	---	NG	---	---	---	---	---	Flooded
4/15/2010	MW-30	---	---	2.14	---	---	---	---	---	---
4/22/2010	MW-30	---	---	2.03	---	---	---	---	---	---
5/3/2010	MW-30	---	---	0.60	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-31	103.36	2.95	2.99	0.04	100.41	100.37	100.40	0.10	---
2/21/2006	MW-31	103.36	3.60	4.15	0.55	99.76	99.21	99.62	1.00	---
3/7/2006	MW-31	103.36	3.84	4.86	1.02	99.52	98.50	99.25	0.66	Hand Bailing
5/18/2006	MW-31	103.36	3.09	3.36	0.27	100.27	100.00	100.20	0.50	---
6/28/2006	MW-31	103.36	3.26	3.59	0.33	100.10	99.77	100.01	0.50	---
8/16/2006	MW-31	103.36	3.65	4.01	0.36	99.71	99.35	99.62	---	---
9/29/2006	MW-31	103.36	3.38	3.65	0.27	99.98	99.71	99.91	---	---
10/20/2006	MW-31	103.36	---	NG	---	---	---	---	---	---
11/22/2006	MW-31	103.36	3.24	3.56	0.32	100.12	99.80	100.04	---	---
12/15/2006	MW-31	103.36	3.69	4.64	0.95	99.67	98.72	99.42	0.75	---
1/23/2007	MW-31	103.36	4.09	4.84	0.75	99.27	98.52	99.08	1.50	---
2/2/2007	MW-31	103.36	3.99	4.72	0.73	99.37	98.64	99.18	0.25	---
3/5/2007	MW-31	103.36	3.79	4.68	0.89	99.57	98.68	99.34	1.25	---
5/1/2007	MW-31	103.36	3.05	3.58	0.53	100.31	99.78	100.17	0.25	---
6/22/2007	MW-31	103.36	3.55	4.15	0.60	99.81	99.21	99.65	0.25	---
6/26/2007	MW-31	103.36	3.81	4.62	0.81	99.55	98.74	99.34	---	---
7/6/2007	MW-31	103.36	3.58	4.73	1.15	99.78	98.63	99.48	0.50	---
8/1/2007	MW-31	103.36	3.44	3.78	0.34	99.92	99.58	99.83	0.25	---
8/7/2007	MW-31	103.36	3.51	3.61	0.10	99.85	99.75	99.82	---	---
9/14/2007	MW-31	103.36	3.99	4.73	0.74	99.37	98.63	99.18	1.00	---
10/8/2007	MW-31	103.36	3.85	4.75	0.90	99.51	98.61	99.28	1.00	---
11/20/2007	MW-31	103.36	3.75	4.85	1.10	99.61	98.51	99.32	1.00	---
12/26/2007	MW-31	103.36	3.90	4.69	0.79	99.46	98.67	99.25	---	---
1/2/2008	MW-31	103.36	---	NG	---	---	---	---	---	---
3/5/2008	MW-31	103.36	---	NG	---	---	---	---	---	---
4/23/2008	MW-31	103.36	---	NG	---	---	---	---	---	---
5/12/2008	MW-31	103.36	2.92	3.34	0.42	100.44	100.02	100.33	---	---
6/27/2008	MW-31	103.36	3.52	4.17	0.65	99.84	99.19	99.67	1.00	---
8/5/2008	MW-31	103.36	3.75	4.66	0.91	99.61	98.70	99.37	1.00	---
9/10/2008	MW-31	103.36	3.63	4.67	1.04	99.73	98.69	99.46	1.00	---
10/27/2008	MW-31	103.36	3.19	4.05	0.86	100.17	99.31	99.95	1.00	---
11/4/2008	MW-31	103.36	4.09	5.25	1.16	99.27	98.11	98.97	1.25	---
1/5/2009	MW-31	103.36	4.02	4.80	0.78	99.34	98.56	99.14	1.25	---
2/27/2009	MW-31	103.36	4.42	4.85	0.43	98.94	98.51	98.83	0.75	---
3/9/2009	MW-31	103.36	3.81	4.34	0.53	99.55	99.02	99.41	1.00	---
4/20/2009	MW-31	103.36	3.68	4.47	0.79	99.68	98.89	99.47	1.50	---
4/29/2009	MW-31	103.36	4.20	4.60	0.40	99.16	98.76	99.06	1.00	---
5/6/2009	MW-31	103.36	3.39	3.91	0.52	99.97	99.45	99.83	1.00	---
6/2/2009	MW-31	103.36	3.71	4.81	1.10	99.65	98.55	99.36	1.00	---
7/6/2009	MW-31	103.36	3.29	3.75	0.46	100.07	99.61	99.95	0.50	---
8/14/2009	MW-31	103.36	3.59	4.05	0.46	99.77	99.31	99.65	0.75	---
9/28/2009	MW-31	103.36	3.42	4.13	0.71	99.94	99.23	99.76	0.75	---
10/13/2009	MW-31	103.36	3.81	4.80	0.99	99.55	98.56	99.29	1.00	---
11/23/2009	MW-31	103.36	3.66	3.91	0.25	99.70	99.45	99.64	---	---
12/2/2009	MW-31	103.36	---	4.84	---	---	98.52	98.52	2.00	---
1/12/2010	MW-31	103.36	3.85	4.56	0.71	99.51	98.80	99.33	0.75	---
2/2/2010	MW-31	103.36	4.23	4.79	0.56	99.13	98.57	98.98	0.75	---
3/2/2010	MW-31	103.36	2.39	2.93	0.54	100.97	100.43	100.83	0.75	---
3/15/2010	MW-31	103.36	1.69	1.75	0.06	101.67	101.61	101.65	---	---
4/15/2010	MW-31	103.36	3.68	3.78	0.10	99.68	99.58	99.65	---	---
4/22/2010	MW-31	103.36	3.26	3.43	0.17	100.10	99.93	100.06	0.25	---
5/3/2010	MW-31	103.36	3.09	3.15	0.06	100.27	100.21	100.25	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-32	104.44	---	3.04	---	---	101.40	101.40	---	---
2/21/2006	MW-32	104.44	---	3.79	---	---	100.65	100.65	---	---
3/7/2006	MW-32	104.44	---	4.50	---	---	99.94	99.94	---	---
5/18/2006	MW-32	104.44	---	3.73	---	---	100.71	100.71	---	---
6/28/2006	MW-32	104.44	---	3.59	---	---	100.85	100.85	---	---
8/16/2006	MW-32	104.44	---	3.71	---	---	100.73	100.73	---	---
9/29/2006	MW-32	104.44	---	3.72	---	---	100.72	100.72	---	---
10/20/2006	MW-32	104.44	---	3.55	---	---	100.89	100.89	---	---
11/21/2006	MW-32	104.44	---	3.57	---	---	100.87	100.87	---	---
12/15/2006	MW-32	104.44	---	4.55	---	---	99.89	99.89	---	---
1/23/2007	MW-32	104.44	---	4.72	---	---	99.72	99.72	---	---
2/2/2007	MW-32	104.44	---	5.01	---	---	99.43	99.43	---	---
3/5/2007	MW-32	104.44	---	3.79	---	---	100.65	100.65	---	---
5/1/2007	MW-32	104.44	---	3.25	---	---	101.19	101.19	---	---
6/22/2007	MW-32	104.44	---	4.11	---	---	100.33	100.33	---	---
6/26/2007	MW-32	104.44	---	4.42	---	---	100.02	100.02	---	---
7/6/2007	MW-32	104.44	---	4.34	---	---	100.10	100.10	---	---
8/1/2007	MW-32	104.44	---	3.71	---	---	100.73	100.73	---	---
8/7/2007	MW-32	104.44	---	3.85	---	---	100.59	100.59	---	---
9/14/2007	MW-32	104.44	---	4.66	---	---	99.78	99.78	---	---
10/8/2007	MW-32	104.44	---	4.84	---	---	99.60	99.60	---	---
11/20/2007	MW-32	104.44	---	4.63	---	---	99.81	99.81	---	---
12/26/2007	MW-32	104.44	---	4.12	---	---	100.32	100.32	---	---
1/2/2008	MW-32	104.44	---	3.71	---	---	100.73	100.73	---	---
3/5/2008	MW-32	104.44	---	3.85	---	---	100.59	100.59	---	---
4/23/2008	MW-32	104.44	---	4.61	---	---	99.83	99.83	---	---
5/12/2008	MW-32	104.44	---	3.54	---	---	100.90	100.90	---	---
6/27/2008	MW-32	104.44	---	4.06	---	---	100.38	100.38	---	---
8/5/2008	MW-32	104.44	---	4.25	---	---	100.19	100.19	---	---
9/10/2008	MW-32	104.44	---	3.60	---	---	100.84	100.84	---	---
10/27/2008	MW-32	104.44	---	4.11	---	---	100.33	100.33	---	---
11/4/2008	MW-32	104.44	---	4.45	---	---	99.99	99.99	---	---
1/5/2009	MW-32	104.44	---	4.30	---	---	100.14	100.14	---	---
2/27/2009	MW-32	104.44	---	5.26	---	---	99.18	99.18	---	---
3/9/2009	MW-32	104.44	---	4.94	---	---	99.50	99.50	---	---
4/20/2009	MW-32	104.44	---	4.45	---	---	99.99	99.99	---	---
4/29/2009	MW-32	104.44	---	4.39	---	---	100.05	100.05	---	---
5/6/2009	MW-32	104.44	---	3.92	---	---	100.52	100.52	---	---
6/2/2009	MW-32	104.44	---	4.59	---	---	99.85	99.85	---	---
7/6/2009	MW-32	104.44	---	3.54	---	---	100.90	100.90	---	---
8/14/2009	MW-32	104.44	---	3.94	---	---	100.50	100.50	---	---
9/28/2009	MW-32	104.44	---	4.24	---	---	100.20	100.20	---	---
10/13/2009	MW-32	104.44	---	4.63	---	---	99.81	99.81	---	---
11/23/2009	MW-32	104.44	---	4.06	---	---	100.38	100.38	---	---
12/2/2009	MW-32	104.44	---	4.77	---	---	99.67	99.67	---	---
1/12/2010	MW-32	104.44	---	4.45	---	---	99.99	99.99	---	---
2/2/2010	MW-32	104.44	---	4.59	---	---	99.85	99.85	---	---
3/2/2010	MW-32	104.44	---	2.77	---	---	101.67	101.67	---	---
3/15/2010	MW-32	104.44	---	1.59	---	---	102.85	102.85	---	---
4/15/2010	MW-32	104.44	---	3.62	---	---	100.82	100.82	---	---
4/22/2010	MW-32	104.44	---	3.66	---	---	100.78	100.78	---	---
5/3/2010	MW-32	104.44	---	2.95	---	---	101.49	101.49	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-33	103.15	---	5.00	---	---	98.15	98.15	---	---
2/21/2006	MW-33	103.15	---	5.71	---	---	97.44	97.44	---	---
3/7/2006	MW-33	103.15	---	5.76	---	---	97.39	97.39	---	---
5/18/2006	MW-33	103.15	---	5.61	---	---	97.54	97.54	---	---
6/28/2006	MW-33	103.15	---	5.62	---	---	97.53	97.53	---	---
8/16/2006	MW-33	103.15	---	5.61	---	---	97.54	97.54	---	---
9/29/2006	MW-33	103.15	---	5.67	---	---	97.48	97.48	---	---
10/20/2006	MW-33	103.15	---	5.43	---	---	97.72	97.72	---	---
11/22/2006	MW-33	103.15	---	5.68	---	---	97.47	97.47	---	---
12/15/2006	MW-33	103.15	---	5.76	---	---	97.39	97.39	---	---
1/23/2007	MW-33	103.15	---	5.85	---	---	97.30	97.30	---	---
2/2/2007	MW-33	103.15	---	6.41	---	---	96.74	96.74	---	---
3/5/2007	MW-33	103.15	---	5.63	---	---	97.52	97.52	---	---
5/1/2007	MW-33	103.15	---	5.38	---	---	97.77	97.77	---	---
6/22/2007	MW-33	103.15	---	5.66	---	---	97.49	97.49	---	---
6/26/2007	MW-33	103.15	---	5.69	---	---	97.46	97.46	---	---
7/6/2007	MW-33	103.15	---	5.65	---	---	97.50	97.50	---	---
8/1/2007	MW-33	103.15	---	5.61	---	---	97.54	97.54	---	---
8/7/2007	MW-33	103.15	---	5.65	---	---	97.50	97.50	---	---
9/14/2007	MW-33	103.15	---	7.29	---	---	95.86	95.86	---	---
10/8/2007	MW-33	103.15	---	5.81	---	---	97.34	97.34	---	---
11/20/2007	MW-33	103.15	---	5.79	---	---	97.36	97.36	---	---
12/26/2007	MW-33	103.15	---	5.66	---	---	97.49	97.49	---	---
1/2/2008	MW-33	103.15	---	5.67	---	---	97.48	97.48	---	---
3/5/2008	MW-33	103.15	---	5.69	---	---	97.46	97.46	---	---
4/23/2008	MW-33	103.15	---	5.74	---	---	97.41	97.41	---	---
5/12/2008	MW-33	103.15	---	5.39	---	---	97.76	97.76	---	---
6/27/2008	MW-33	103.15	---	5.65	---	---	97.50	97.50	---	---
8/5/2008	MW-33	103.15	---	5.68	---	---	97.47	97.47	---	---
9/10/2008	MW-33	103.15	---	7.21	---	---	95.94	95.94	---	---
10/27/2008	MW-33	103.15	---	5.59	---	---	97.56	97.56	---	---
11/4/2008	MW-33	103.15	---	5.71	---	---	97.44	97.44	---	---
1/5/2009	MW-33	103.15	---	5.74	---	---	97.41	97.41	---	---
2/27/2009	MW-33	103.15	---	6.57	---	---	96.58	96.58	---	---
3/9/2009	MW-33	103.15	---	5.96	---	---	97.19	97.19	---	---
4/20/2009	MW-33	103.15	---	5.72	---	---	97.43	97.43	---	---
4/29/2009	MW-33	103.15	---	5.70	---	---	97.45	97.45	---	---
5/6/2009	MW-33	103.15	---	5.51	---	---	97.64	97.64	---	---
6/2/2009	MW-33	103.15	---	5.72	---	---	97.43	97.43	---	---
7/6/2009	MW-33	103.15	---	5.80	---	---	97.55	97.55	---	---
8/14/2009	MW-33	103.15	---	5.64	---	---	97.51	97.51	---	---
9/28/2009	MW-33	103.15	---	5.59	---	---	97.56	97.56	---	---
10/13/2009	MW-33	103.15	---	5.71	---	---	97.44	97.44	---	---
11/23/2009	MW-33	103.15	---	5.25	---	---	97.90	97.90	---	---
12/2/2009	MW-33	103.15	---	5.70	---	---	97.45	97.45	---	---
1/12/2010	MW-33	103.15	---	5.71	---	---	97.44	97.44	---	---
2/2/2010	MW-33	103.15	---	5.72	---	---	97.43	97.43	---	---
3/2/2010	MW-33	103.15	---	4.85	---	---	98.30	98.30	---	---
3/15/2010	MW-33	103.15	5.69	5.69	0.00	97.46	97.46	97.46	---	Trace LNAPL
4/15/2010	MW-33	103.15	---	5.62	---	---	97.53	97.53	---	---
4/22/2010	MW-33	103.15	---	5.59	---	---	97.56	97.56	---	---
5/3/2010	MW-33	103.15	---	5.35	---	---	97.80	97.80	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-34 / RW-34	---	---	6.56	---	---	---	---	---	---
2/21/2006	MW-34 / RW-34	---	---	7.31	---	---	---	---	---	---
3/7/2006	MW-34 / RW-34	---	---	7.47	---	---	---	---	---	---
5/18/2006	MW-34 / RW-34	---	---	7.13	---	---	---	---	---	---
6/28/2006	MW-34 / RW-34	---	---	7.12	---	---	---	---	---	---
8/16/2006	MW-34 / RW-34	---	---	7.05	---	---	---	---	---	---
9/29/2006	MW-34 / RW-34	---	---	7.18	---	---	---	---	---	---
10/20/2006	MW-34 / RW-34	---	---	6.42	---	---	---	---	---	---
11/22/2006	MW-34 / RW-34	---	---	5.48	---	---	---	---	---	---
12/15/2006	MW-34 / RW-34	---	---	7.81	---	---	---	---	---	---
1/23/2007	MW-34 / RW-34	---	---	7.96	---	---	---	---	---	---
2/2/2007	MW-34 / RW-34	---	---	8.11	---	---	---	---	---	---
3/5/2007	MW-34 / RW-34	---	---	7.11	---	---	---	---	---	---
5/1/2007	MW-34 / RW-34	---	---	6.86	---	---	---	---	---	---
6/22/2007	MW-34 / RW-34	---	---	7.15	---	---	---	---	---	---
6/26/2007	MW-34 / RW-34	---	---	7.22	---	---	---	---	---	---
7/6/2007	MW-34 / RW-34	---	---	7.18	---	---	---	---	---	---
8/1/2007	MW-34 / RW-34	---	---	7.09	---	---	---	---	---	---
8/7/2007	MW-34 / RW-34	---	---	7.14	---	---	---	---	---	---
9/14/2007	MW-34 / RW-34	---	---	5.71	---	---	---	---	---	---
10/8/2007	MW-34 / RW-34	---	---	7.79	---	---	---	---	---	---
11/20/2007	MW-34 / RW-34	---	---	7.43	---	---	---	---	---	---
12/26/2007	MW-34 / RW-34	---	---	7.19	---	---	---	---	---	---
1/2/2008	MW-34 / RW-34	---	---	7.14	---	---	---	---	---	---
3/5/2008	MW-34 / RW-34	---	---	7.14	---	---	---	---	---	---
4/23/2008	MW-34 / RW-34	---	---	7.39	---	---	---	---	---	---
5/12/2008	MW-34 / RW-34	---	6.70	6.85	0.15	---	---	---	---	---
6/27/2008	MW-34 / RW-34	---	---	7.15	---	---	---	---	---	---
8/5/2008	MW-34 / RW-34	---	7.11	7.21	0.10	---	---	---	0.25	---
9/10/2008	MW-34 / RW-34	---	---	5.70	---	---	---	---	---	---
10/27/2008	MW-34 / RW-34	---	---	7.02	---	---	---	---	---	---
11/4/2008	MW-34 / RW-34	---	---	7.19	---	---	---	---	---	---
1/5/2009	MW-34 / RW-34	---	---	7.39	---	---	---	---	---	---
2/27/2009	MW-34 / RW-34	---	---	8.30	---	---	---	---	---	---
3/9/2009	MW-34 / RW-34	---	---	8.09	---	---	---	---	---	---
4/20/2009	MW-34 / RW-34	---	---	7.41	---	---	---	---	---	---
4/29/2009	MW-34 / RW-34	---	---	7.24	---	---	---	---	---	---
5/6/2009	MW-34 / RW-34	---	---	7.02	---	---	---	---	---	---
6/2/2009	MW-34 / RW-34	---	---	7.29	---	---	---	---	---	---
7/6/2009	MW-34 / RW-34	---	7.10	7.11	0.01	---	---	---	0.50	---
8/14/2009	MW-34 / RW-34	---	7.09	7.13	0.04	---	---	---	---	---
9/28/2009	MW-34 / RW-34	---	7.07	7.13	0.06	---	---	---	---	---
10/13/2009	MW-34 / RW-34	---	7.38	7.45	0.07	---	---	---	---	---
11/23/2009	MW-34 / RW-34	---	7.18	7.22	0.04	---	---	---	---	---
12/2/2009	MW-34 / RW-34	---	7.28	7.32	0.04	---	---	---	---	---
1/12/2010	MW-34 / RW-34	---	7.31	7.33	0.02	---	---	---	---	---
2/2/2010	MW-34 / RW-34	---	---	7.35	---	---	---	---	---	---
3/2/2010	MW-34 / RW-34	---	---	6.33	---	---	---	---	---	---
3/15/2010	MW-34 / RW-34	---	---	4.04	---	---	---	---	---	---
4/15/2010	MW-34 / RW-34	---	7.11	7.16	0.05	---	---	---	---	---
4/22/2010	MW-34 / RW-34	---	7.09	7.14	0.05	---	---	---	---	---
5/3/2010	MW-34 / RW-34	---	6.81	6.85	0.04	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603
25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-35	103.89	---	5.74	---	---	98.15	98.15	---	---
2/21/2006	MW-35	103.89	---	6.42	---	---	97.47	97.47	---	---
3/7/2006	MW-35	103.89	---	6.53	---	---	97.36	97.36	---	---
5/18/2006	MW-35	103.89	---	6.42	---	---	97.47	97.47	---	---
6/28/2006	MW-35	103.89	---	6.44	---	---	97.45	97.45	---	---
8/16/2006	MW-35	103.89	---	6.40	---	---	97.49	97.49	---	---
9/29/2006	MW-35	103.89	---	6.49	---	---	97.40	97.40	---	---
10/20/2006	MW-35	103.89	---	6.27	---	---	97.62	97.62	---	---
11/22/2006	MW-35	103.89	---	6.46	---	---	97.43	97.43	---	---
12/15/2006	MW-35	103.89	---	6.56	---	---	97.33	97.33	---	---
1/23/2007	MW-35	103.89	---	6.69	---	---	97.20	97.20	---	---
2/2/2007	MW-35	103.89	---	6.88	---	---	97.01	97.01	---	---
3/5/2007	MW-35	103.89	---	6.38	---	---	97.51	97.51	---	---
5/1/2007	MW-35	103.89	---	6.13	---	---	97.76	97.76	---	---
6/22/2007	MW-35	103.89	---	6.49	---	---	97.40	97.40	---	---
6/26/2007	MW-35	103.89	---	6.49	---	---	97.40	97.40	---	---
7/6/2007	MW-35	103.89	---	6.48	---	---	97.41	97.41	---	---
8/1/2007	MW-35	103.89	---	6.42	---	---	97.47	97.47	---	---
8/7/2007	MW-35	103.89	---	6.48	---	---	97.41	97.41	---	---
9/14/2007	MW-35	103.89	---	6.49	---	---	97.40	97.40	---	---
10/8/2007	MW-35	103.89	---	6.61	---	---	97.28	97.28	---	---
11/20/2007	MW-35	103.89	---	6.52	---	---	97.37	97.37	---	---
12/26/2007	MW-35	103.89	---	6.45	---	---	97.44	97.44	---	---
1/2/2008	MW-35	103.89	---	6.46	---	---	97.43	97.43	---	---
3/5/2008	MW-35	103.89	---	6.49	---	---	97.40	97.40	---	---
4/23/2008	MW-35	103.89	---	6.58	---	---	97.31	97.31	---	---
5/12/2008	MW-35	103.89	---	6.14	---	---	97.75	97.75	---	---
6/27/2008	MW-35	103.89	---	6.49	---	---	97.40	97.40	---	---
8/5/2008	MW-35	103.89	---	6.48	---	---	97.41	97.41	---	---
9/10/2008	MW-35	103.89	---	6.47	---	---	97.42	97.42	---	---
10/27/2008	MW-35	103.89	---	6.39	---	---	97.50	97.50	---	---
11/4/2008	MW-35	103.89	---	6.51	---	---	97.38	97.38	---	---
1/5/2009	MW-35	103.89	---	6.55	---	---	97.34	97.34	---	---
2/27/2009	MW-35	103.89	---	6.83	---	---	97.06	97.06	---	---
3/9/2009	MW-35	103.89	---	6.81	---	---	97.08	97.08	---	---
4/20/2009	MW-35	103.89	---	6.56	---	---	97.33	97.33	---	---
4/29/2009	MW-35	103.89	---	6.51	---	---	97.38	97.38	---	---
5/6/2009	MW-35	103.89	---	6.45	---	---	97.44	97.44	---	---
6/2/2009	MW-35	103.89	---	6.51	---	---	97.38	97.38	---	---
7/6/2009	MW-35	103.89	---	6.46	---	---	97.43	97.43	---	---
8/14/2009	MW-35	103.89	---	6.49	---	---	97.40	97.40	---	---
9/28/2009	MW-35	103.89	---	6.47	---	---	97.42	97.42	---	---
10/13/2009	MW-35	103.89	---	6.50	---	---	97.39	97.39	---	---
11/23/2009	MW-35	103.89	---	6.48	---	---	97.41	97.41	---	---
12/2/2009	MW-35	103.89	---	6.49	---	---	97.40	97.40	---	---
1/12/2010	MW-35	103.89	---	6.49	---	---	97.40	97.40	---	---
2/2/2010	MW-35	103.89	---	6.53	---	---	97.36	97.36	---	---
3/2/2010	MW-35	103.89	---	5.61	---	---	98.28	98.28	---	---
3/15/2010	MW-35	103.89	---	5.02	---	---	98.87	98.87	---	---
4/15/2010	MW-35	103.89	---	6.47	---	---	97.42	97.42	---	---
4/22/2010	MW-35	103.89	---	6.46	---	---	97.43	97.43	---	---
5/3/2010	MW-35	103.89	---	6.47	---	---	97.42	97.42	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-36 / RW-36	103.87	7.99	8.21	0.22	95.88	95.66	95.82	0.50	---
2/21/2006	MW-36 / RW-36	103.87	9.10	9.22	0.12	94.77	94.65	94.74	0.10	---
3/7/2006	MW-36 / RW-36	103.87	9.51	10.02	0.51	94.36	93.85	94.23	1.00	---
5/18/2006	MW-36 / RW-36	103.87	8.59	8.82	0.23	95.28	95.05	95.22	0.25	---
6/28/2006	MW-36 / RW-36	103.87	8.37	8.69	0.32	95.50	95.18	95.42	---	---
8/16/2006	MW-36 / RW-36	103.87	8.75	8.76	0.01	95.12	95.11	95.12	---	---
9/29/2006	MW-36 / RW-36	103.87	8.62	8.89	0.27	95.25	94.98	95.18	---	---
10/20/2006	MW-36 / RW-36	103.87	7.80	7.98	0.18	96.07	95.89	96.02	---	---
11/22/2006	MW-36 / RW-36	103.87	8.05	8.33	0.28	95.82	95.54	95.75	---	---
12/15/2006	MW-36 / RW-36	103.87	8.86	8.95	0.09	95.01	94.92	94.99	---	---
1/23/2007	MW-36 / RW-36	103.87	9.48	9.53	0.05	94.39	94.34	94.38	---	---
2/2/2007	MW-36 / RW-36	103.87	8.58	8.60	0.02	95.29	95.27	95.28	---	---
3/5/2007	MW-36 / RW-36	103.87	9.04	9.11	0.07	94.83	94.76	94.81	---	---
5/1/2007	MW-36 / RW-36	103.87	8.15	8.52	0.37	95.72	95.35	95.62	1.25	---
6/22/2007	MW-36 / RW-36	103.87	8.95	9.25	0.30	94.92	94.82	94.84	0.25	---
6/26/2007	MW-36 / RW-36	103.87	9.29	9.63	0.34	94.58	94.24	94.49	---	---
7/6/2007	MW-36 / RW-36	103.87	9.41	9.92	0.51	94.46	93.95	94.33	0.50	---
8/1/2007	MW-36 / RW-36	103.87	8.77	9.05	0.28	95.10	94.82	95.03	0.25	---
8/7/2007	MW-36 / RW-36	103.87	8.64	8.88	0.24	95.23	94.99	95.17	0.25	---
9/14/2007	MW-36 / RW-36	103.87	8.91	9.51	0.60	94.96	94.36	94.80	0.75	---
10/8/2007	MW-36 / RW-36	103.87	8.51	8.85	0.34	95.36	95.02	95.27	0.25	---
11/20/2007	MW-36 / RW-36	103.87	8.91	9.22	0.31	94.96	94.65	94.88	0.50	---
12/26/2007	MW-36 / RW-36	103.87	8.85	9.05	0.20	95.02	94.82	94.97	---	---
1/2/2008	MW-36 / RW-36	103.87	8.95	9.45	0.50	94.92	94.42	94.79	0.75	---
3/5/2008	MW-36 / RW-36	103.87	8.38	8.53	0.15	95.49	95.34	95.45	0.25	---
4/23/2008	MW-36 / RW-36	103.87	9.50	9.56	0.06	94.37	94.31	94.35	---	---
5/12/2008	MW-36 / RW-36	103.87	7.89	8.03	0.14	95.98	95.84	95.94	---	---
6/27/2008	MW-36 / RW-36	103.87	---	8.95	---	---	94.92	94.92	---	---
8/5/2008	MW-36 / RW-36	103.87	9.13	9.98	0.85	94.74	93.89	94.52	1.00	---
9/10/2008	MW-36 / RW-36	103.87	8.77	9.69	0.92	95.10	94.18	94.86	1.00	---
10/27/2008	MW-36 / RW-36	103.87	7.78	7.91	0.13	96.09	95.96	96.06	0.25	---
11/4/2008	MW-36 / RW-36	103.87	9.55	9.64	0.09	94.32	94.23	94.30	---	---
1/5/2009	MW-36 / RW-36	103.87	10.50	10.51	0.01	93.37	93.36	93.37	---	---
2/27/2009	MW-36 / RW-36	103.87	9.19	9.21	0.02	94.68	94.66	94.67	---	---
3/9/2009	MW-36 / RW-36	103.87	7.99	8.00	0.01	95.88	95.87	95.88	---	---
4/20/2009	MW-36 / RW-36	103.87	8.60	8.68	0.08	95.27	95.19	95.25	0.25	---
4/29/2009	MW-36 / RW-36	103.87	---	10.52	---	---	93.35	93.35	---	---
5/6/2009	MW-36 / RW-36	103.87	8.22	8.47	0.25	95.65	95.40	95.59	0.50	---
6/2/2009	MW-36 / RW-36	103.87	9.09	9.45	0.36	94.78	94.42	94.69	0.50	---
7/6/2009	MW-36 / RW-36	103.87	8.41	8.59	0.18	95.46	95.28	95.41	0.50	---
8/14/2009	MW-36 / RW-36	103.87	8.98	9.34	0.36	94.89	94.53	94.80	0.50	---
9/28/2009	MW-36 / RW-36	103.87	9.03	9.31	0.28	94.84	94.56	94.77	0.50	---
10/13/2009	MW-36 / RW-36	103.87	9.69	9.86	0.17	94.18	94.01	94.14	0.25	---
11/23/2009	MW-36 / RW-36	103.87	---	8.78	---	---	95.09	95.09	---	---
12/2/2009	MW-36 / RW-36	103.87	8.08	8.13	0.05	95.79	95.74	95.78	---	---
1/12/2010	MW-36 / RW-36	103.87	8.88	8.95	0.07	94.99	94.92	94.97	---	---
2/2/2010	MW-36 / RW-36	103.87	9.35	9.39	0.04	94.52	94.48	94.51	---	---
3/2/2010	MW-36 / RW-36	103.87	---	NG	---	---	---	---	---	---
3/15/2010	MW-36 / RW-36	103.87	6.73	6.82	0.09	97.14	97.05	97.12	---	---
4/15/2010	MW-36 / RW-36	103.87	8.68	8.76	0.08	95.19	95.11	95.17	---	---
4/22/2010	MW-36 / RW-36	103.87	8.62	8.65	0.03	95.25	95.22	95.24	---	---
5/3/2010	MW-36 / RW-36	103.87	8.64	8.78	0.14	95.23	95.09	95.19	0.25	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft.)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-37 / RW-37	103.49	---	6.98	---	---	96.51	96.51	---	---
2/21/2006	MW-37 / RW-37	103.49	---	8.15	---	---	95.34	95.34	---	---
3/7/2006	MW-37 / RW-37	103.49	---	7.86	---	---	95.63	95.63	---	---
5/18/2006	MW-37 / RW-37	103.49	---	NG	---	---	---	---	---	---
6/28/2006	MW-37 / RW-37	103.49	---	7.59	---	---	95.90	95.90	---	---
8/16/2006	MW-37 / RW-37	103.49	---	7.56	---	---	95.93	95.93	---	---
9/29/2006	MW-37 / RW-37	103.49	---	7.58	---	---	95.91	95.91	---	---
10/20/2006	MW-37 / RW-37	103.49	---	7.54	---	---	95.95	95.95	---	---
11/22/2006	MW-37 / RW-37	103.49	---	7.59	---	---	95.90	95.90	---	---
12/15/2006	MW-37 / RW-37	103.49	---	7.92	---	---	95.57	95.57	---	---
1/23/2007	MW-37 / RW-37	103.49	---	8.18	---	---	95.31	95.31	---	---
2/2/2007	MW-37 / RW-37	103.49	---	8.53	---	---	94.96	94.96	---	---
3/5/2007	MW-37 / RW-37	103.49	---	7.47	---	---	96.02	96.02	---	---
5/1/2007	MW-37 / RW-37	103.49	7.19	7.20	0.01	96.30	96.29	96.30	---	---
6/22/2007	MW-37 / RW-37	103.49	7.61	7.64	0.03	95.88	95.85	95.87	---	---
6/26/2007	MW-37 / RW-37	103.49	8.04	8.11	0.07	95.45	95.38	95.43	---	---
7/6/2007	MW-37 / RW-37	103.49	7.78	7.79	0.01	95.71	95.70	95.71	---	---
8/1/2007	MW-37 / RW-37	103.49	7.59	7.61	0.02	95.90	95.88	95.89	---	---
8/7/2007	MW-37 / RW-37	103.49	7.61	7.75	0.14	95.88	95.74	95.84	0.25	---
9/14/2007	MW-37 / RW-37	103.49	7.83	7.87	0.04	95.66	95.62	95.65	---	---
10/8/2007	MW-37 / RW-37	103.49	7.99	8.00	0.01	95.50	95.49	95.50	---	---
11/20/2007	MW-37 / RW-37	103.49	---	7.89	---	---	95.60	95.60	---	---
12/26/2007	MW-37 / RW-37	103.49	---	7.60	---	---	95.89	95.89	---	---
1/2/2008	MW-37 / RW-37	103.49	---	7.65	---	---	95.84	95.84	---	---
3/5/2008	MW-37 / RW-37	103.49	---	7.61	---	---	95.88	95.88	---	---
4/23/2008	MW-37 / RW-37	103.49	---	7.80	---	---	95.69	95.69	---	---
5/12/2008	MW-37 / RW-37	103.49	7.39	7.41	0.02	96.10	96.08	96.09	---	---
6/27/2008	MW-37 / RW-37	103.49	7.66	7.69	0.03	95.83	95.80	95.82	---	---
8/5/2008	MW-37 / RW-37	103.49	7.86	7.88	0.02	95.63	95.61	95.62	---	---
9/10/2008	MW-37 / RW-37	103.49	---	7.69	---	---	95.80	95.80	---	---
10/27/2008	MW-37 / RW-37	103.49	---	7.13	---	---	96.36	96.36	---	---
11/4/2008	MW-37 / RW-37	103.49	---	7.98	---	---	95.51	95.51	---	---
1/5/2009	MW-37 / RW-37	103.49	---	7.90	---	---	95.59	95.59	---	---
2/27/2009	MW-37 / RW-37	103.49	8.35	8.37	0.02	95.14	95.12	95.13	---	---
3/9/2009	MW-37 / RW-37	103.49	---	8.25	---	---	95.24	95.24	---	---
4/20/2009	MW-37 / RW-37	103.49	---	7.89	---	---	95.60	95.60	---	---
4/29/2009	MW-37 / RW-37	103.49	---	7.91	---	---	95.58	95.58	---	---
5/6/2009	MW-37 / RW-37	103.49	---	6.75	---	---	96.74	96.74	---	---
6/2/2009	MW-37 / RW-37	103.49	---	7.89	---	---	95.60	95.60	---	---
7/6/2009	MW-37 / RW-37	103.49	---	7.56	---	---	95.93	95.93	---	---
8/14/2009	MW-37 / RW-37	103.49	7.64	7.69	0.05	95.85	95.80	95.84	---	---
9/28/2009	MW-37 / RW-37	103.49	---	7.71	---	---	95.78	95.78	---	---
10/13/2009	MW-37 / RW-37	103.49	7.84	7.87	0.03	95.65	95.62	95.64	---	---
11/23/2009	MW-37 / RW-37	103.49	---	7.59	---	---	95.90	95.90	---	---
12/2/2009	MW-37 / RW-37	103.49	---	7.75	---	---	95.74	95.74	---	---
1/12/2010	MW-37 / RW-37	103.49	7.74	7.75	0.01	95.75	95.74	95.75	---	---
2/2/2010	MW-37 / RW-37	103.49	7.86	7.89	0.03	95.63	95.60	95.62	---	---
3/2/2010	MW-37 / RW-37	103.49	---	NG	---	---	---	---	---	---
3/15/2010	MW-37 / RW-37	103.49	6.08	6.09	0.01	97.41	97.40	97.41	---	---
4/15/2010	MW-37 / RW-37	103.49	7.58	7.62	0.04	95.91	95.87	95.90	---	---
4/22/2010	MW-37 / RW-37	103.49	7.56	7.58	0.02	95.93	95.91	95.92	---	---
5/3/2010	MW-37 / RW-37	103.49	7.48	7.50	0.02	96.01	95.99	96.00	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water- Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-38	---	---	6.49	---	---	---	---	---	---
2/21/2006	MW-38	---	---	7.01	---	---	---	---	---	---
3/7/2006	MW-38	---	---	7.26	---	---	---	---	---	---
5/18/2006	MW-38	---	---	6.95	---	---	---	---	---	---
6/28/2006	MW-38	---	---	6.83	---	---	---	---	---	---
8/16/2006	MW-38	---	---	6.90	---	---	---	---	---	---
10/20/2006	MW-38	---	---	6.65	---	---	---	---	---	---
11/22/2006	MW-38	---	---	6.76	---	---	---	---	---	---
12/15/2006	MW-38	---	---	7.25	---	---	---	---	---	---
1/23/2007	MW-38	---	---	7.48	---	---	---	---	---	---
2/2/2007	MW-38	---	---	7.62	---	---	---	---	---	---
3/5/2007	MW-38	---	---	7.27	---	---	---	---	---	---
5/1/2007	MW-38	---	---	6.60	---	---	---	---	---	---
6/22/2007	MW-38	---	---	6.65	---	---	---	---	---	---
6/26/2007	MW-38	---	---	7.12	---	---	---	---	---	---
7/6/2007	MW-38	---	---	7.16	---	---	---	---	---	---
8/1/2007	MW-38	---	---	6.81	---	---	---	---	---	---
8/7/2007	MW-38	---	---	6.86	---	---	---	---	---	---
9/14/2007	MW-38	---	---	7.19	---	---	---	---	---	---
10/8/2007	MW-38	---	---	7.49	---	---	---	---	---	---
11/20/2007	MW-38	---	---	7.35	---	---	---	---	---	---
12/26/2007	MW-38	---	---	7.07	---	---	---	---	---	---
1/2/2008	MW-38	---	---	6.94	---	---	---	---	---	---
3/5/2008	MW-38	---	---	7.05	---	---	---	---	---	---
4/23/2008	MW-38	---	---	7.35	---	---	---	---	---	---
5/12/2008	MW-38	---	---	6.85	---	---	---	---	---	---
6/27/2008	MW-38	---	---	7.07	---	---	---	---	---	---
8/5/2008	MW-38	---	---	7.17	---	---	---	---	---	---
9/10/2008	MW-38	---	---	7.16	---	---	---	---	---	---
10/27/2008	MW-38	---	---	5.82	---	---	---	---	---	---
11/4/2008	MW-38	---	---	7.29	---	---	---	---	---	---
1/5/2009	MW-38	---	---	7.38	---	---	---	---	---	---
2/27/2009	MW-38	---	---	7.92	---	---	---	---	---	---
3/9/2009	MW-38	---	---	7.94	---	---	---	---	---	---
4/20/2009	MW-38	---	---	7.45	---	---	---	---	---	---
4/29/2009	MW-38	---	---	7.38	---	---	---	---	---	---
5/6/2009	MW-38	---	---	7.22	---	---	---	---	---	---
6/2/2009	MW-38	---	---	7.39	---	---	---	---	---	---
7/6/2009	MW-38	---	---	6.70	---	---	---	---	---	---
8/14/2009	MW-38	---	---	6.93	---	---	---	---	---	---
9/28/2009	MW-38	---	---	7.05	---	---	---	---	---	---
10/13/2009	MW-38	---	---	7.24	---	---	---	---	---	---
11/23/2009	MW-38	---	---	6.93	---	---	---	---	---	---
12/2/2009	MW-38	---	---	7.23	---	---	---	---	---	---
1/12/2010	MW-38	---	---	7.28	---	---	---	---	---	---
2/2/2010	MW-38	---	---	7.38	---	---	---	---	---	---
3/2/2010	MW-38	---	---	NG	---	---	---	---	---	---
3/15/2010	MW-38	---	---	5.71	---	---	---	---	---	---
4/15/2010	MW-38	---	---	6.83	---	---	---	---	---	---
4/22/2010	MW-38	---	---	6.84	---	---	---	---	---	---
5/3/2010	MW-38	---	---	6.63	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-39	---	---	6.50	---	---	---	---	---	---
2/21/2006	MW-39	---	---	7.06	---	---	---	---	---	---
3/7/2006	MW-39	---	---	7.01	---	---	---	---	---	---
5/18/2006	MW-39	---	---	6.86	---	---	---	---	---	---
6/28/2006	MW-39	---	---	6.45	---	---	---	---	---	---
8/16/2006	MW-39	---	---	6.79	---	---	---	---	---	---
9/29/2006	MW-39	---	---	6.52	---	---	---	---	---	---
10/20/2006	MW-39	---	---	5.42	---	---	---	---	---	---
11/22/2006	MW-39	---	---	5.60	---	---	---	---	---	---
12/15/2006	MW-39	---	---	6.49	---	---	---	---	---	---
1/23/2007	MW-39	---	---	7.14	---	---	---	---	---	---
2/2/2007	MW-39	---	---	6.47	---	---	---	---	---	---
3/5/2007	MW-39	---	---	6.84	---	---	---	---	---	---
5/1/2007	MW-39	---	---	6.26	---	---	---	---	---	---
6/22/2007	MW-39	---	---	6.95	---	---	---	---	---	---
6/26/2007	MW-39	---	---	6.97	---	---	---	---	---	---
7/6/2007	MW-39	---	---	7.18	---	---	---	---	---	---
8/1/2007	MW-39	---	---	6.88	---	---	---	---	---	---
8/7/2007	MW-39	---	---	6.61	---	---	---	---	---	---
9/14/2007	MW-39	---	---	6.95	---	---	---	---	---	---
10/8/2007	MW-39	---	---	6.24	---	---	---	---	---	---
11/20/2007	MW-39	---	---	6.55	---	---	---	---	---	---
12/26/2007	MW-39	---	---	6.84	---	---	---	---	---	---
1/2/2008	MW-39	---	---	6.85	---	---	---	---	---	---
3/5/2008	MW-39	---	---	6.14	---	---	---	---	---	---
4/23/2008	MW-39	---	---	7.12	---	---	---	---	---	---
5/12/2008	MW-39	---	---	5.64	---	---	---	---	---	---
6/27/2008	MW-39	---	---	NM	---	---	---	---	---	---
8/5/2008	MW-39	---	---	7.16	---	---	---	---	---	---
9/10/2008	MW-39	---	---	6.73	---	---	---	---	---	---
10/27/2008	MW-39	---	---	5.33	---	---	---	---	---	---
11/4/2008	MW-39	---	---	7.34	---	---	---	---	---	---
1/5/2009	MW-39	---	---	7.53	---	---	---	---	---	---
2/27/2009	MW-39	---	---	7.52	---	---	---	---	---	---
3/9/2009	MW-39	---	---	5.23	---	---	---	---	---	---
4/20/2009	MW-39	---	---	6.12	---	---	---	---	---	---
4/29/2009	MW-39	---	---	7.76	---	---	---	---	---	---
5/6/2009	MW-39	---	---	5.89	---	---	---	---	---	---
6/2/2009	MW-39	---	---	6.63	---	---	---	---	---	---
7/6/2009	MW-39	---	---	6.70	---	---	---	---	---	---
8/14/2009	MW-39	---	---	6.64	---	---	---	---	---	---
9/28/2009	MW-39	---	---	6.63	---	---	---	---	---	---
10/13/2009	MW-39	---	---	6.77	---	---	---	---	---	---
11/23/2009	MW-39	---	---	6.67	---	---	---	---	---	---
12/2/2009	MW-39	---	---	5.49	---	---	---	---	---	---
1/12/2010	MW-39	---	---	6.65	---	---	---	---	---	---
2/2/2010	MW-39	---	---	7.49	---	---	---	---	---	---
3/2/2010	MW-39	---	---	4.68	---	---	---	---	---	---
3/15/2010	MW-39	---	---	5.43	---	---	---	---	---	---
4/15/2010	MW-39	---	---	7.07	---	---	---	---	---	---
4/22/2010	MW-39	---	---	6.60	---	---	---	---	---	---
5/3/2010	MW-39	---	---	6.71	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
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Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-40 / RW-40	---	7.64	8.25	0.61	---	---	---	---	---
2/21/2006	MW-40 / RW-40	---	8.20	8.47	0.27	---	---	---	---	---
3/7/2006	MW-40 / RW-40	---	9.29	10.14	0.85	---	---	---	---	---
5/18/2006	MW-40 / RW-40	---	7.87	8.69	0.82	---	---	---	---	---
6/28/2006	MW-40 / RW-40	---	8.14	8.86	0.72	---	---	---	---	---
8/16/2006	MW-40 / RW-40	---	8.40	8.95	0.55	---	---	---	---	---
9/29/2006	MW-40 / RW-40	---	7.98	8.40	0.42	---	---	---	---	---
10/20/2006	MW-40 / RW-40	---	8.04	8.98	0.94	---	---	---	---	---
11/22/2006	MW-40 / RW-40	---	7.50	8.39	0.89	---	---	---	---	---
12/15/2006	MW-40 / RW-40	---	8.50	8.65	0.15	---	---	---	0.50	---
1/23/2007	MW-40 / RW-40	---	8.90	8.92	0.02	---	---	---	---	---
2/2/2007	MW-40 / RW-40	---	8.56	8.90	0.34	---	---	---	---	---
3/5/2007	MW-40 / RW-40	---	7.49	8.29	0.80	---	---	---	0.50	---
5/1/2007	MW-40 / RW-40	---	7.35	8.21	0.86	---	---	---	1.50	---
6/22/2007	MW-40 / RW-40	---	8.09	9.21	1.12	---	---	---	2.00	---
6/26/2007	MW-40 / RW-40	---	8.43	9.53	1.10	---	---	---	---	---
7/6/2007	MW-40 / RW-40	---	8.67	8.89	0.22	---	---	---	0.25	---
8/1/2007	MW-40 / RW-40	---	7.87	8.79	0.92	---	---	---	2.00	---
8/7/2007	MW-40 / RW-40	---	8.06	8.35	0.29	---	---	---	0.25	---
9/14/2007	MW-40 / RW-40	---	8.81	8.83	0.02	---	---	---	---	---
10/8/2007	MW-40 / RW-40	---	8.29	8.31	0.02	---	---	---	---	---
11/20/2007	MW-40 / RW-40	---	8.41	8.51	0.10	---	---	---	0.25	---
12/26/2007	MW-40 / RW-40	---	7.55	9.30	1.75	---	---	---	---	---
1/2/2008	MW-40 / RW-40	---	7.59	9.41	1.82	---	---	---	2.00	---
3/5/2008	MW-40 / RW-40	---	7.75	8.39	0.64	---	---	---	0.50	---
4/23/2008	MW-40 / RW-40	---	8.66	9.10	0.44	---	---	---	0.75	---
5/12/2008	MW-40 / RW-40	---	7.21	7.81	0.60	---	---	---	---	---
6/27/2008	MW-40 / RW-40	---	---	8.60	---	---	---	---	---	---
8/5/2008	MW-40 / RW-40	---	8.85	9.10	0.25	---	---	---	0.25	---
9/10/2008	MW-40 / RW-40	---	7.70	8.68	0.98	---	---	---	1.00	---
10/27/2008	MW-40 / RW-40	---	7.32	9.06	1.74	---	---	---	2.00	---
11/4/2008	MW-40 / RW-40	---	9.35	10.25	0.90	---	---	---	1.25	---
1/5/2009	MW-40 / RW-40	---	9.90	9.93	0.03	---	---	---	---	---
2/27/2009	MW-40 / RW-40	---	8.99	9.00	0.01	---	---	---	---	---
3/9/2009	MW-40 / RW-40	---	7.49	7.51	0.02	---	---	---	---	---
4/20/2009	MW-40 / RW-40	---	8.10	8.33	0.23	---	---	---	0.50	---
4/29/2009	MW-40 / RW-40	---	10.40	10.46	0.06	---	---	---	0.25	---
5/6/2009	MW-40 / RW-40	---	7.79	7.89	0.10	---	---	---	0.25	---
6/2/2009	MW-40 / RW-40	---	8.88	9.07	0.19	---	---	---	0.25	---
7/6/2009	MW-40 / RW-40	---	8.23	9.50	1.27	---	---	---	1.50	---
8/14/2009	MW-40 / RW-40	---	8.98	9.08	0.10	---	---	---	0.25	---
9/28/2009	MW-40 / RW-40	---	8.87	9.14	0.27	---	---	---	0.50	---
10/13/2009	MW-40 / RW-40	---	8.97	9.23	0.26	---	---	---	0.25	---
11/23/2009	MW-40 / RW-40	---	---	8.65	---	---	---	---	---	---
12/2/2009	MW-40 / RW-40	---	7.32	7.35	0.03	---	---	---	---	---
1/12/2010	MW-40 / RW-40	---	8.76	8.87	0.11	---	---	---	---	---
2/2/2010	MW-40 / RW-40	---	9.31	9.42	0.11	---	---	---	0.25	---
3/2/2010	MW-40 / RW-40	---	6.92	7.04	0.12	---	---	---	0.25	---
3/15/2010	MW-40 / RW-40	---	6.16	7.41	1.25	---	---	---	---	---
4/15/2010	MW-40 / RW-40	---	9.09	9.11	0.02	---	---	---	---	---
4/22/2010	MW-40 / RW-40	---	8.56	8.79	0.23	---	---	---	0.25	---
5/3/2010	MW-40 / RW-40	---	8.59	10.55	1.96	---	---	---	2.00	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Pajdige Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	MW-41	---	7.59	7.63	0.04	---	---	---	0.10	---
2/21/2006	MW-41	---	8.20	8.21	0.01	---	---	---	0.10	---
3/7/2006	MW-41	---	---	8.14	---	---	---	---	---	---
5/18/2006	MW-41	---	---	8.19	---	---	---	---	---	---
6/28/2006	MW-41	---	7.32	7.39	0.07	---	---	---	---	---
8/16/2006	MW-41	---	7.95	8.01	0.06	---	---	---	---	---
9/29/2006	MW-41	---	7.78	7.94	0.16	---	---	---	---	---
10/20/2006	MW-41	---	---	6.34	---	---	---	---	---	---
11/22/2006	MW-41	---	6.68	6.71	0.03	---	---	---	---	---
12/15/2006	MW-41	---	7.60	7.62	0.02	---	---	---	---	---
1/23/2007	MW-41	---	---	8.16	---	---	---	---	---	---
2/2/2007	MW-41	---	---	6.85	---	---	---	---	---	---
3/5/2007	MW-41	---	---	7.99	---	---	---	---	---	---
5/1/2007	MW-41	---	7.05	7.16	0.11	---	---	---	---	---
6/22/2007	MW-41	---	8.12	8.18	0.06	---	---	---	---	---
6/26/2007	MW-41	---	7.69	7.72	0.03	---	---	---	---	---
7/6/2007	MW-41	---	8.16	8.21	0.05	---	---	---	---	---
8/1/2007	MW-41	---	7.79	7.91	0.12	---	---	---	---	---
8/7/2007	MW-41	---	7.69	7.79	0.10	---	---	---	---	---
9/14/2007	MW-41	---	7.84	7.96	0.12	---	---	---	0.25	---
10/8/2007	MW-41	---	7.12	7.15	0.03	---	---	---	0.25	---
11/20/2007	MW-41	---	7.61	7.63	0.02	---	---	---	---	---
12/26/2007	MW-41	---	---	8.05	---	---	---	---	---	---
1/2/2008	MW-41	---	8.00	8.09	0.09	---	---	---	0.25	---
3/5/2008	MW-41	---	7.09	7.18	0.09	---	---	---	0.25	---
4/23/2008	MW-41	---	8.11	8.16	0.05	---	---	---	---	---
5/12/2008	MW-41	---	6.48	6.49	0.01	---	---	---	---	---
6/27/2008	MW-41	---	7.67	7.82	0.15	---	---	---	0.25	---
8/5/2008	MW-41	---	8.12	8.18	0.06	---	---	---	---	---
9/10/2008	MW-41	---	7.68	7.75	0.07	---	---	---	---	---
10/27/2008	MW-41	---	---	7.60	---	---	---	---	---	---
11/4/2008	MW-41	---	8.21	8.22	0.01	---	---	---	---	---
1/5/2009	MW-41	---	9.96	9.98	0.02	---	---	---	---	---
2/27/2009	MW-41	---	---	8.11	---	---	---	---	---	---
3/9/2009	MW-41	---	---	5.94	---	---	---	---	---	---
4/20/2009	MW-41	---	---	7.31	---	---	---	---	---	---
4/29/2009	MW-41	---	9.13	9.14	0.01	---	---	---	---	---
5/6/2009	MW-41	---	6.61	6.62	0.01	---	---	---	---	---
6/2/2009	MW-41	---	8.09	8.15	0.06	---	---	---	---	---
7/6/2009	MW-41	---	---	7.35	---	---	---	---	---	---
8/14/2009	MW-41	---	8.15	8.25	0.10	---	---	---	0.25	---
9/28/2009	MW-41	---	8.15	8.24	0.09	---	---	---	---	---
10/13/2009	MW-41	---	8.24	8.33	0.09	---	---	---	0.25	---
11/23/2009	MW-41	---	7.51	7.55	0.04	---	---	---	---	---
12/2/2009	MW-41	---	---	6.13	---	---	---	---	---	---
1/12/2010	MW-41	---	8.01	8.04	0.03	---	---	---	---	---
2/2/2010	MW-41	---	8.05	8.07	0.02	---	---	---	---	---
3/2/2010	MW-41	---	---	NG	---	---	---	---	---	---
3/15/2010	MW-41	---	5.94	5.95	0.01	---	---	---	---	---
4/15/2010	MW-41	---	8.01	8.21	0.20	---	---	---	---	---
4/22/2010	MW-41	---	8.24	8.41	0.17	---	---	---	0.25	---
5/3/2010	MW-41	---	8.11	8.28	0.17	---	---	---	0.25	---
3/2/2010	MW-42	---	---	2.90	---	---	---	---	---	---
3/15/2010	MW-42	---	---	2.50	---	---	---	---	---	---
4/15/2010	MW-42	---	---	3.54	---	---	---	---	---	---
4/22/2010	MW-42	---	---	3.78	---	---	---	---	---	---
5/3/2010	MW-42	---	---	3.45	---	---	---	---	---	---
3/2/2010	MW-43	---	---	2.91	---	---	---	---	---	---
3/15/2010	MW-43	---	---	2.64	---	---	---	---	---	---
4/15/2010	MW-43	---	---	3.47	---	---	---	---	---	---
4/22/2010	MW-43	---	---	3.64	---	---	---	---	---	---
5/3/2010	MW-43	---	---	3.41	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
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NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
3/2/2010	MW-44	---	---	2.87	---	---	---	---	---	---
3/15/2010	MW-44	---	---	2.47	---	---	---	---	---	---
4/15/2010	MW-44	---	---	3.58	---	---	---	---	---	---
4/22/2010	MW-44	---	---	3.59	---	---	---	---	---	---
5/3/2010	MW-44	---	---	3.37	---	---	---	---	---	---
1/6/2006	TW-01	---	---	3.36	---	---	---	---	---	---
2/21/2006	TW-01	---	---	NG	---	---	---	---	---	---
3/7/2006	TW-01	---	4.28	4.34	0.06	---	---	---	0.10	---
5/18/2006	TW-01	---	3.78	3.81	0.03	---	---	---	0.25	---
6/28/2006	TW-01	---	3.79	3.84	0.05	---	---	---	---	---
8/16/2006	TW-01	---	---	NG	---	---	---	---	---	---
9/29/2006	TW-01	---	---	NG	---	---	---	---	---	---
10/20/2006	TW-01	---	4.17	4.21	0.04	---	---	---	---	---
12/15/2006	TW-01	---	4.28	4.32	0.04	---	---	---	---	---
1/23/2007	TW-01	---	---	NG	---	---	---	---	---	---
2/2/2007	TW-01	---	---	4.21	---	---	---	---	---	---
3/5/2007	TW-01	---	4.21	4.22	0.01	---	---	---	---	---
5/1/2007	TW-01	---	---	NG	---	---	---	---	---	---
6/22/2007	TW-01	---	---	NG	---	---	---	---	---	---
6/26/2007	TW-01	---	---	NG	---	---	---	---	---	---
7/6/2007	TW-01	---	---	NG	---	---	---	---	---	---
8/1/2007	TW-01	---	---	NG	---	---	---	---	---	---
8/7/2007	TW-01	---	---	NG	---	---	---	---	---	---
9/14/2007	TW-01	---	---	NG	---	---	---	---	---	---
10/8/2007	TW-01	---	---	NG	---	---	---	---	---	---
11/20/2007	TW-01	---	---	NG	---	---	---	---	---	---
12/26/2007	TW-01	---	---	NG	---	---	---	---	---	---
1/2/2008	TW-01	---	---	NG	---	---	---	---	---	---
3/5/2008	TW-01	---	---	NG	---	---	---	---	---	---
4/23/2008	TW-01	---	---	NG	---	---	---	---	---	---
5/12/2008	TW-01	---	---	NG	---	---	---	---	---	---
6/27/2008	TW-01	---	---	NG	---	---	---	---	---	---
8/5/2008	TW-01	---	---	NG	---	---	---	---	---	---
9/10/2008	TW-01	---	---	NG	---	---	---	---	---	---
10/27/2008	TW-01	---	---	NG	---	---	---	---	---	---
11/4/2008	TW-01	---	---	NG	---	---	---	---	---	---
1/5/2009	TW-01	---	---	NG	---	---	---	---	---	---
2/27/2009	TW-01	---	---	NG	---	---	---	---	---	---
3/9/2009	TW-01	---	---	NG	---	---	---	---	---	---
4/20/2009	TW-01	---	4.21	4.28	0.07	---	---	---	---	---
4/29/2009	TW-01	---	4.35	4.40	0.05	---	---	---	---	Under water
5/6/2009	TW-01	---	---	NG	---	---	---	---	---	Under water
6/2/2009	TW-01	---	---	NG	---	---	---	---	---	Under Water
7/6/2009	TW-01	---	---	NG	---	---	---	---	---	Under Water
8/14/2009	TW-01	---	---	NG	---	---	---	---	---	---
9/28/2009	TW-01	---	---	NG	---	---	---	---	---	---
10/13/2009	TW-01	---	---	NG	---	---	---	---	---	---
11/23/2009	TW-01	---	---	NG	---	---	---	---	---	---
12/2/2009	TW-01	---	---	NG	---	---	---	---	---	---
1/12/2010	TW-01	---	4.30	4.33	0.03	---	---	---	---	---
2/2/2010	TW-01	---	4.42	4.44	0.02	---	---	---	---	---
3/2/2010	TW-01	---	---	NG	---	---	---	---	---	Under Water
3/15/2010	TW-01	---	---	NG	---	---	---	---	---	Flooded
4/15/2010	TW-01	---	---	NG	---	---	---	---	---	---
4/22/2010	TW-01	---	---	NG	---	---	---	---	---	---
5/3/2010	TW-01	---	---	NG	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
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Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
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Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
1/6/2006	TW-02	---	---	3.17	---	---	---	---	---	---
2/21/2006	TW-02	---	---	3.98	---	---	---	---	---	---
3/7/2006	TW-02	---	---	4.21	---	---	---	---	---	---
5/18/2006	TW-02	---	---	3.59	---	---	---	---	---	---
6/28/2006	TW-02	---	---	3.58	---	---	---	---	---	---
8/16/2006	TW-02	---	---	3.89	---	---	---	---	---	---
9/29/2006	TW-02	---	---	3.65	---	---	---	---	---	---
10/20/2006	TW-02	---	---	3.98	---	---	---	---	---	---
12/15/2006	TW-02	---	---	4.16	---	---	---	---	---	---
1/23/2007	TW-02	---	---	4.49	---	---	---	---	---	---
2/2/2007	TW-02	---	---	4.37	---	---	---	---	---	---
3/5/2007	TW-02	---	4.15	4.16	0.01	---	---	---	---	---
5/1/2007	TW-02	---	3.52	3.54	0.02	---	---	---	---	---
6/22/2007	TW-02	---	---	NG	---	---	---	---	---	---
6/26/2007	TW-02	---	4.16	4.18	0.02	---	---	---	---	---
7/6/2007	TW-02	---	4.02	4.05	0.03	---	---	---	---	---
8/1/2007	TW-02	---	3.64	4.02	0.38	---	---	---	---	---
8/7/2007	TW-02	---	---	NG	---	---	---	---	---	---
9/14/2007	TW-02	---	---	NG	---	---	---	---	---	---
10/8/2007	TW-02	---	---	NG	---	---	---	---	---	---
11/20/2007	TW-02	---	---	NG	---	---	---	---	---	---
12/26/2007	TW-02	---	---	4.07	---	---	---	---	---	---
1/2/2008	TW-02	---	---	NG	---	---	---	---	---	---
3/5/2008	TW-02	---	---	NG	---	---	---	---	---	---
4/23/2008	TW-02	---	---	NG	---	---	---	---	---	---
5/12/2008	TW-02	---	---	3.34	---	---	---	---	---	---
6/27/2008	TW-02	---	3.68	4.10	0.42	---	---	---	---	---
8/5/2008	TW-02	---	---	NG	---	---	---	---	---	---
9/10/2008	TW-02	---	---	NG	---	---	---	---	---	---
10/27/2008	TW-02	---	---	NG	---	---	---	---	---	---
11/4/2008	TW-02	---	---	4.29	---	---	---	---	---	---
1/5/2009	TW-02	---	---	4.25	---	---	---	---	---	---
2/27/2009	TW-02	---	---	4.79	---	---	---	---	---	---
3/9/2009	TW-02	---	---	4.45	---	---	---	---	---	---
4/20/2009	TW-02	---	---	4.20	---	---	---	---	---	---
4/29/2009	TW-02	---	---	4.30	---	---	---	---	---	---
5/6/2009	TW-02	---	---	3.79	---	---	---	---	---	---
6/2/2009	TW-02	---	---	4.11	---	---	---	---	---	---
7/6/2009	TW-02	---	---	NG	---	---	---	---	---	---
8/14/2009	TW-02	---	---	NG	---	---	---	---	---	---
9/28/2009	TW-02	---	---	3.93	---	---	---	---	---	---
10/13/2009	TW-02	---	---	4.18	---	---	---	---	---	---
11/23/2009	TW-02	---	---	3.89	---	---	---	---	---	---
12/2/2009	TW-02	---	---	4.30	---	---	---	---	---	---
1/12/2010	TW-02	---	---	4.17	---	---	---	---	---	---
2/2/2010	TW-02	---	---	4.31	---	---	---	---	---	---
3/2/2010	TW-02	---	---	2.79	---	---	---	---	---	---
3/15/2010	TW-02	---	---	2.04	---	---	---	---	---	---
4/15/2010	TW-02	---	---	3.76	---	---	---	---	---	---
4/22/2010	TW-02	---	---	3.61	---	---	---	---	---	---
5/3/2010	TW-02	---	---	3.35	---	---	---	---	---	---

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25 Paidge Avenue
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Date	Well #	Top of Casing Elevation (ft.)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
2/21/2006	TW-03	---	---	NG	---	---	---	---	---	---
3/7/2006	TW-03	---	3.74	3.76	0.02	---	---	---	0.10	---
5/18/2006	TW-03	---	---	3.19	---	---	---	---	---	---
6/28/2006	TW-03	---	---	3.02	---	---	---	---	---	---
8/16/2006	TW-03	---	---	NG	---	---	---	---	---	---
9/29/2006	TW-03	---	---	NG	---	---	---	---	---	---
10/20/2006	TW-03	---	3.94	3.96	0.02	---	---	---	---	---
12/15/2006	TW-03	---	3.62	3.71	0.09	---	---	---	---	---
1/23/2007	TW-03	---	4.01	4.09	0.08	---	---	---	---	---
2/2/2007	TW-03	---	4.06	4.11	0.05	---	---	---	---	---
3/5/2007	TW-03	---	---	NG	---	---	---	---	---	---
5/1/2007	TW-03	---	---	NG	---	---	---	---	---	---
6/22/2007	TW-03	---	---	NG	---	---	---	---	---	---
7/6/2007	TW-03	---	---	NG	---	---	---	---	---	---
8/1/2007	TW-03	---	---	NG	---	---	---	---	---	---
8/7/2007	TW-03	---	---	NG	---	---	---	---	---	---
9/14/2007	TW-03	---	---	NG	---	---	---	---	---	---
10/8/2007	TW-03	---	---	NG	---	---	---	---	---	---
11/20/2007	TW-03	---	---	NG	---	---	---	---	---	---
12/26/2007	TW-03	---	---	NG	---	---	---	---	---	---
1/2/2008	TW-03	---	---	NG	---	---	---	---	---	---
3/5/2008	TW-03	---	---	NG	---	---	---	---	---	---
4/23/2008	TW-03	---	---	NG	---	---	---	---	---	---
5/12/2008	TW-03	---	---	NG	---	---	---	---	---	---
6/27/2008	TW-03	---	---	NG	---	---	---	---	---	---
8/5/2008	TW-03	---	---	NG	---	---	---	---	---	---
9/10/2008	TW-03	---	---	NG	---	---	---	---	---	---
10/27/2008	TW-03	---	---	NG	---	---	---	---	---	---
11/4/2008	TW-03	---	---	NG	---	---	---	---	---	---
1/5/2009	TW-03	---	---	NG	---	---	---	---	---	---
2/27/2009	TW-03	---	---	NG	---	---	---	---	---	---
3/9/2009	TW-03	---	---	NG	---	---	---	---	---	---
4/20/2009	TW-03	---	---	NG	---	---	---	---	---	---
4/29/2009	TW-03	---	---	NG	---	---	---	---	---	Under water
5/6/2009	TW-03	---	---	NG	---	---	---	---	---	Under water
6/2/2009	TW-03	---	---	NG	---	---	---	---	---	Under Water
7/6/2009	TW-03	---	---	NG	---	---	---	---	---	Under Water
8/14/2009	TW-03	---	---	NG	---	---	---	---	---	---
9/28/2009	TW-03	---	---	NG	---	---	---	---	---	---
10/13/2009	TW-03	---	---	NG	---	---	---	---	---	---
11/23/2009	TW-03	---	---	NG	---	---	---	---	---	---
12/2/2009	TW-03	---	---	NG	---	---	---	---	---	---
1/12/2010	TW-03	---	---	NG	---	---	---	---	---	---
2/2/2010	TW-03	---	---	NG	---	---	---	---	---	Under Water
3/2/2010	TW-03	---	---	NG	---	---	---	---	---	Under Water
3/15/2010	TW-03	---	---	NG	---	---	---	---	---	Flooded
4/15/2010	TW-03	---	---	NG	---	---	---	---	---	---
4/22/2010	TW-03	---	---	NG	---	---	---	---	---	---
5/3/2010	TW-03	---	---	NG	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603
25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
2/21/2006	TW-04	---	---	NG	---	---	---	---	---	---
3/7/2006	TW-04	---	---	NG	---	---	---	---	---	---
5/18/2006	TW-04	---	---	2.66	---	---	---	---	---	---
6/28/2006	TW-04	---	---	NG	---	---	---	---	---	---
8/16/2006	TW-04	---	---	NG	---	---	---	---	---	---
9/29/2006	TW-04	---	---	NG	---	---	---	---	---	---
10/20/2006	TW-04	---	---	NG	---	---	---	---	---	---
12/15/2006	TW-04	---	---	3.05	---	---	---	---	---	---
1/23/2007	TW-04	---	---	3.15	---	---	---	---	---	---
2/2/2007	TW-04	---	---	3.36	---	---	---	---	---	---
3/5/2007	TW-04	---	---	NG	---	---	---	---	---	---
5/1/2007	TW-04	---	---	NG	---	---	---	---	---	---
6/22/2007	TW-04	---	---	NG	---	---	---	---	---	---
6/26/2007	TW-04	---	---	NG	---	---	---	---	---	---
7/6/2007	TW-04	---	---	NG	---	---	---	---	---	---
8/1/2007	TW-04	---	---	NG	---	---	---	---	---	---
8/7/2007	TW-04	---	---	NG	---	---	---	---	---	---
9/14/2007	TW-04	---	---	NG	---	---	---	---	---	---
10/8/2007	TW-04	---	---	NG	---	---	---	---	---	---
11/20/2007	TW-04	---	---	NG	---	---	---	---	---	---
12/26/2007	TW-04	---	---	NG	---	---	---	---	---	---
1/2/2008	TW-04	---	---	NG	---	---	---	---	---	---
3/5/2008	TW-04	---	---	NG	---	---	---	---	---	---
4/23/2008	TW-04	---	---	NG	---	---	---	---	---	---
5/12/2008	TW-04	---	---	NG	---	---	---	---	---	---
6/27/2008	TW-04	---	---	NG	---	---	---	---	---	---
8/5/2008	TW-04	---	---	NG	---	---	---	---	---	---
9/10/2008	TW-04	---	---	NG	---	---	---	---	---	---
10/27/2008	TW-04	---	---	NG	---	---	---	---	---	---
11/4/2008	TW-04	---	---	NG	---	---	---	---	---	---
1/5/2009	TW-04	---	---	NG	---	---	---	---	---	---
2/27/2009	TW-04	---	---	NG	---	---	---	---	---	---
3/9/2009	TW-04	---	---	NG	---	---	---	---	---	---
4/20/2009	TW-04	---	---	NG	---	---	---	---	---	---
4/29/2009	TW-04	---	---	NG	---	---	---	---	---	Under water
5/6/2009	TW-04	---	---	NG	---	---	---	---	---	Under water
6/2/2009	TW-04	---	---	NG	---	---	---	---	---	Under Water
7/6/2009	TW-04	---	---	NG	---	---	---	---	---	Under Water
8/14/2009	TW-04	---	---	NG	---	---	---	---	---	---
9/28/2009	TW-04	---	---	NG	---	---	---	---	---	---
10/13/2009	TW-04	---	---	NG	---	---	---	---	---	---
11/23/2009	TW-04	---	---	NG	---	---	---	---	---	---
12/2/2009	TW-04	---	---	NG	---	---	---	---	---	---
1/12/2010	TW-04	---	---	NG	---	---	---	---	---	---
2/2/2010	TW-04	---	---	NG	---	---	---	---	---	Under Water
3/2/2010	TW-04	---	---	NG	---	---	---	---	---	Under Water
3/15/2010	TW-04	---	---	NG	---	---	---	---	---	Flooded
4/15/2010	TW-04	---	---	NG	---	---	---	---	---	---
4/22/2010	TW-04	---	---	NG	---	---	---	---	---	---
5/3/2010	TW-04	---	---	NG	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

Motiva Enterprises LLC Terminal # 58603

25 Paidge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
2/21/2006	TW-05	---	---	NG	---	---	---	---	---	---
3/7/2006	TW-05	---	3.54	3.75	0.21	---	---	---	0.50	---
5/18/2006	TW-05	---	2.75	2.90	0.15	---	---	---	0.25	---
6/28/2006	TW-05	---	2.72	2.91	0.19	---	---	---	---	---
9/29/2006	TW-05	---	3.05	3.20	0.15	---	---	---	---	---
10/20/2006	TW-05	---	---	NG	---	---	---	---	---	---
12/15/2006	TW-05	---	3.42	3.71	0.29	---	---	---	0.25	---
1/23/2007	TW-05	---	3.80	4.17	0.37	---	---	---	0.25	---
2/2/2007	TW-05	---	3.75	4.14	0.39	---	---	---	0.25	---
3/5/2007	TW-05	---	3.56	3.67	0.11	---	---	---	0.25	---
5/1/2007	TW-05	---	2.56	2.65	0.09	---	---	---	0.25	---
6/22/2007	TW-05	---	---	NG	---	---	---	---	---	---
6/26/2007	TW-05	---	4.33	4.54	0.21	---	---	---	---	---
7/6/2007	TW-05	---	3.25	3.33	0.08	---	---	---	---	---
8/1/2007	TW-05	---	---	NG	---	---	---	---	---	---
8/7/2007	TW-05	---	---	NG	---	---	---	---	---	---
9/14/2007	TW-05	---	---	NG	---	---	---	---	---	---
10/8/2007	TW-05	---	---	NG	---	---	---	---	---	---
11/20/2007	TW-05	---	---	NG	---	---	---	---	---	---
12/26/2007	TW-05	---	---	NG	---	---	---	---	---	---
1/2/2008	TW-05	---	---	NG	---	---	---	---	---	---
3/5/2008	TW-05	---	---	NG	---	---	---	---	---	---
4/23/2008	TW-05	---	---	NG	---	---	---	---	---	---
5/12/2008	TW-05	---	---	NG	---	---	---	---	---	---
6/27/2008	TW-05	---	---	NG	---	---	---	---	---	---
8/5/2008	TW-05	---	---	NG	---	---	---	---	---	---
9/10/2008	TW-05	---	---	NG	---	---	---	---	---	---
10/27/2008	TW-05	---	---	NG	---	---	---	---	---	---
11/4/2008	TW-05	---	---	NG	---	---	---	---	---	---
1/5/2009	TW-05	---	---	NG	---	---	---	---	---	---
4/20/2009	TW-05	---	3.44	3.62	0.18	---	---	---	---	---
4/29/2009	TW-05	---	3.79	4.00	0.21	---	---	---	---	---
5/6/2009	TW-05	---	---	NG	---	---	---	---	---	Under water
6/2/2009	TW-05	---	---	NG	---	---	---	---	---	Under Water
7/6/2009	TW-05	---	---	NG	---	---	---	---	---	Under Water
8/14/2009	TW-05	---	---	NG	---	---	---	---	---	---
9/28/2009	TW-05	---	3.19	3.26	0.07	---	---	---	0.25	---
10/13/2009	TW-05	---	3.35	3.68	0.33	---	---	---	0.50	---
11/23/2009	TW-05	---	---	NG	---	---	---	---	---	---
12/2/2009	TW-05	---	---	NG	---	---	---	---	---	---
1/12/2010	TW-05	---	---	NG	---	---	---	---	---	---
2/2/2010	TW-05	---	---	NG	---	---	---	---	---	Under Water
3/2/2010	TW-05	---	---	NG	---	---	---	---	---	Under Water
3/15/2010	TW-05	---	---	NG	---	---	---	---	---	Flooded
4/15/2010	TW-05	---	---	NG	---	---	---	---	---	---
4/22/2010	TW-05	---	---	NG	---	---	---	---	---	---
5/3/2010	TW-05	---	---	NG	---	---	---	---	---	---

Table 3
Groundwater Elevation Summary
(Sorted by Well)

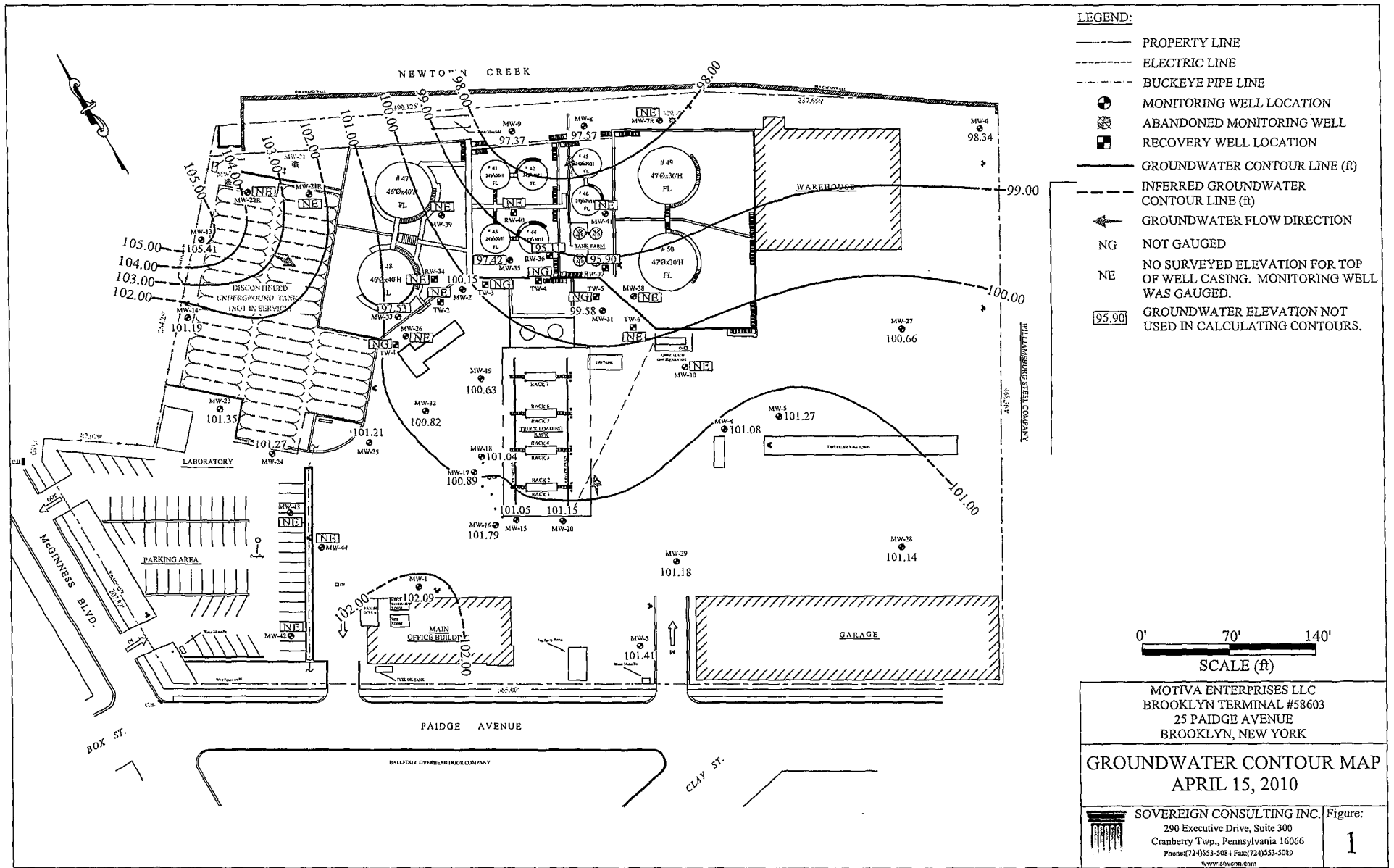
Motiva Enterprises LLC Terminal # 58603

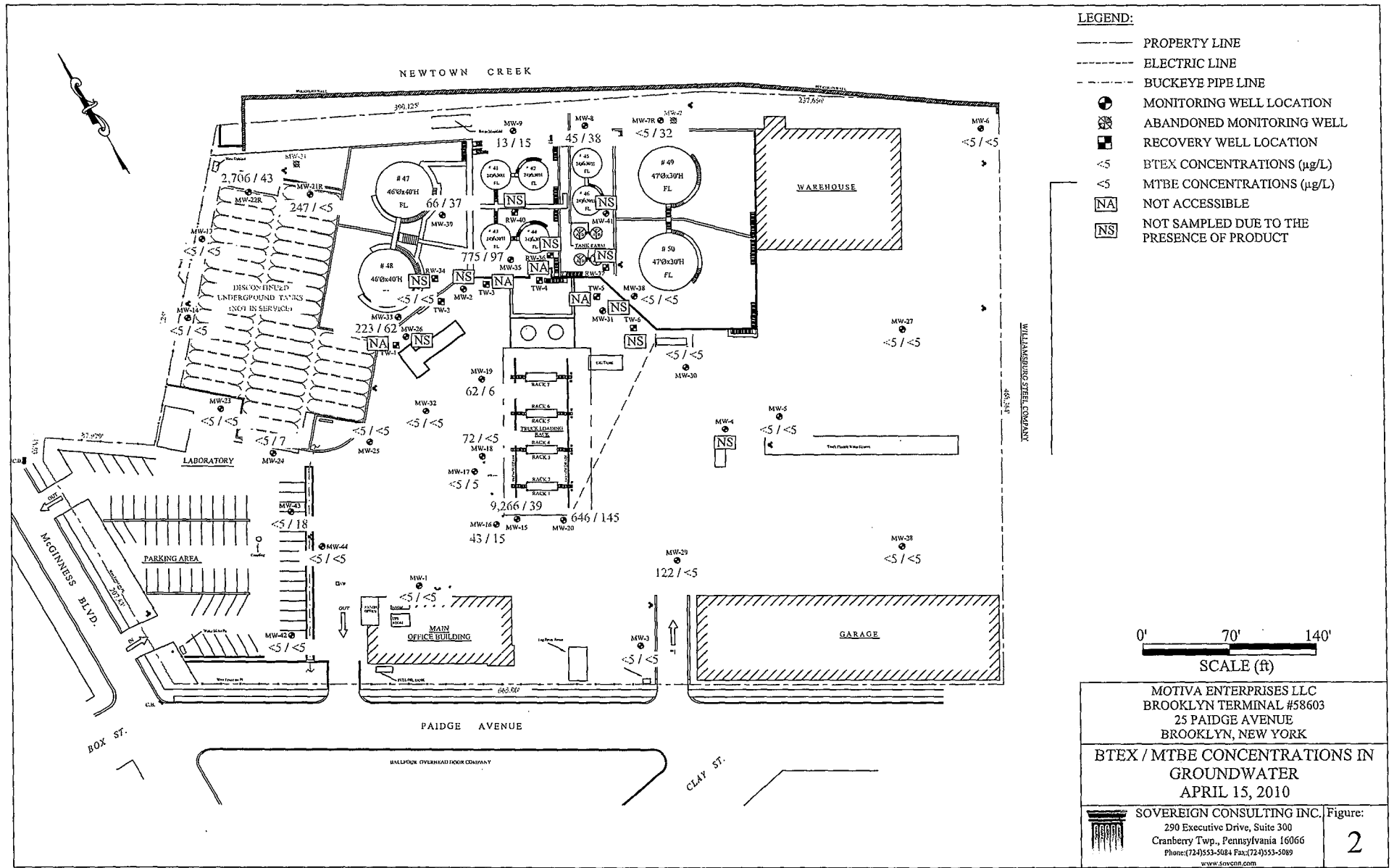
25 Paldge Avenue
Brooklyn, New York
NYSDEC SPILL NO. 87-09990

Date	Well #	Top of Casing Elevation (ft)	Depth to Product (ft.)	Depth to Water (ft.)	Product Thickness (ft.)	Product Elevation (ft.)	Water-Table Elevation (ft.)	Corrected Water-Table Elevation (ft.)	Product Rec. (gal.)	Notes
2/21/2006	TW-06	---	---	NG	---	---	---	---	---	---
3/7/2006	TW-06	---	3.05	3.19	0.14	---	---	---	0.10	---
5/18/2006	TW-06	---	---	NG	---	---	---	---	---	---
6/28/2006	TW-06	---	2.52	2.68	0.16	---	---	---	---	---
9/29/2006	TW-06	---	---	NG	---	---	---	---	---	---
10/20/2006	TW-06	---	---	NG	---	---	---	---	---	---
12/15/2006	TW-06	---	2.98	3.24	0.26	---	---	---	---	---
1/23/2007	TW-06	---	3.35	3.59	0.24	---	---	---	---	---
2/2/2007	TW-06	---	3.28	3.48	0.20	---	---	---	0.25	---
3/5/2007	TW-06	---	3.10	3.14	0.04	---	---	---	---	---
5/1/2007	TW-06	---	2.32	2.34	0.02	---	---	---	---	---
6/22/2007	TW-06	---	---	NG	---	---	---	---	---	---
6/26/2007	TW-06	---	3.08	3.13	0.05	---	---	---	---	---
7/6/2007	TW-06	---	---	NG	---	---	---	---	---	---
8/1/2007	TW-06	---	---	NG	---	---	---	---	---	---
8/7/2007	TW-06	---	---	NG	---	---	---	---	---	---
9/14/2007	TW-06	---	---	NG	---	---	---	---	---	---
10/8/2007	TW-06	---	---	NG	---	---	---	---	---	---
11/20/2007	TW-06	---	---	NG	---	---	---	---	---	---
12/26/2007	TW-06	---	---	NG	---	---	---	---	---	---
1/2/2008	TW-06	---	---	NG	---	---	---	---	---	---
3/5/2008	TW-06	---	---	NG	---	---	---	---	---	---
4/23/2008	TW-06	---	---	NG	---	---	---	---	---	---
5/12/2008	TW-06	---	---	NG	---	---	---	---	---	---
6/27/2008	TW-06	---	---	NG	---	---	---	---	---	---
8/5/2008	TW-06	---	---	NG	---	---	---	---	---	---
9/10/2008	TW-06	---	---	NG	---	---	---	---	---	---
10/27/2008	TW-06	---	---	NG	---	---	---	---	---	---
11/4/2008	TW-06	---	---	NG	---	---	---	---	---	---
1/5/2009	TW-06	---	---	NG	---	---	---	---	---	---
2/27/2009	TW-06	---	---	NG	---	---	---	---	---	---
3/9/2009	TW-06	---	---	NG	---	---	---	---	---	---
4/20/2009	TW-06	---	---	NG	---	---	---	---	---	---
4/29/2009	TW-06	---	---	NG	---	---	---	---	---	Under water
5/6/2009	TW-06	---	---	NG	---	---	---	---	---	Under water
6/2/2009	TW-06	---	---	NG	---	---	---	---	---	Under Water
7/6/2009	TW-06	---	---	NG	---	---	---	---	---	Under Water
8/14/2009	TW-06	---	---	NG	---	---	---	---	---	---
9/28/2009	TW-06	---	---	NG	---	---	---	---	---	---
10/13/2009	TW-06	---	---	NG	---	---	---	---	---	---
11/23/2009	TW-06	---	---	NG	---	---	---	---	---	---
12/2/2009	TW-06	---	---	NG	---	---	---	---	---	---
1/12/2010	TW-06	---	---	NG	---	---	---	---	---	---
2/2/2010	TW-06	---	---	NG	---	---	---	---	---	Under Water
3/2/2010	TW-06	---	---	NG	---	---	---	---	---	---
3/15/2010	TW-06	---	---	NG	---	---	---	---	---	Flooded
4/15/2010	TW-06	---	2.82	2.85	0.03	---	---	---	---	---
4/22/2010	TW-06	---	2.82	2.85	0.03	---	---	---	---	---
5/3/2010	TW-06	---	---	NG	---	---	---	---	---	---

Note:
NG = Not Gauged

FIGURES





DRAWN: 06/03/2010 REVISED: 06/03/2010

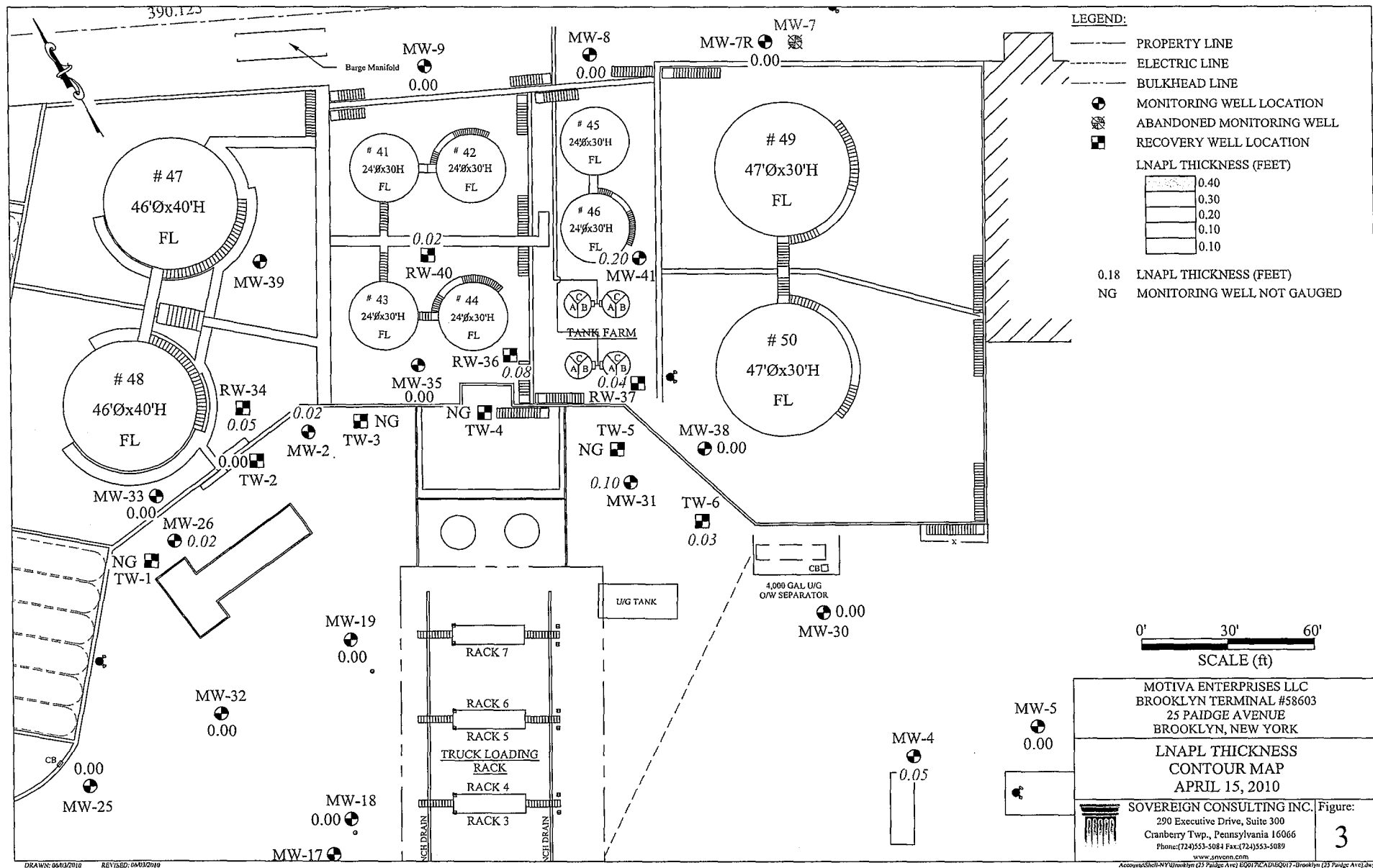
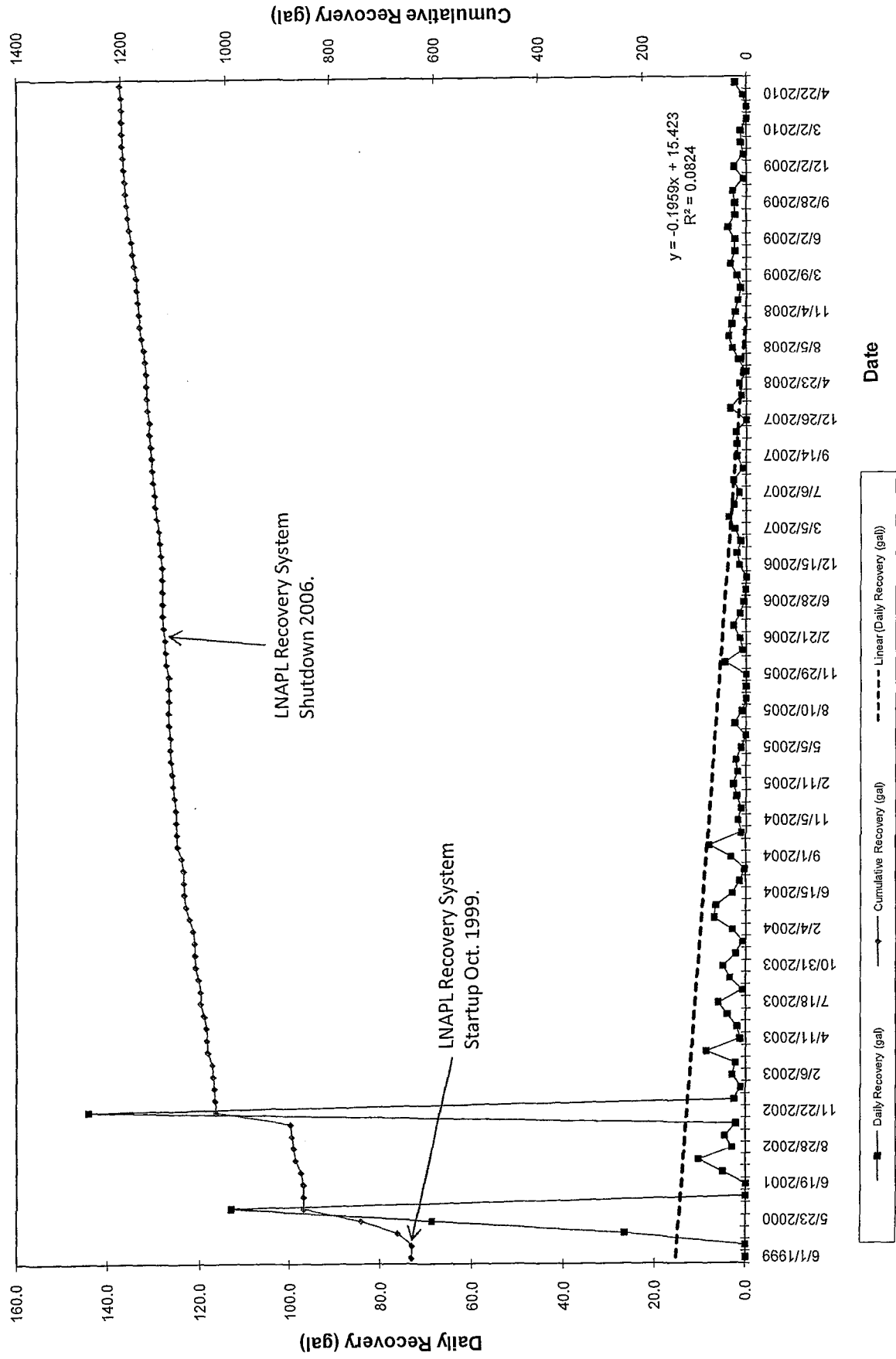


Figure 4 - LNAPL Recovery Graph
 Motiva Enterprises LLC - Brooklyn Terminal, New York



APPENDIX A

April 2010 Groundwater Analysis Laboratory Report

Analytical Report 369409

for

Sovereign Consulting, Inc. (NY)

Project Manager: Gregory Bosiljcic

25 Paidge Avenue

EQ24

30-APR-10



4143 Greenbriar Dr., Stafford, TX 77477

Ph:(281) 240-4200 Fax:(281) 240-4280

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)

Xenco-Boca Raton (EPA Lab Code: FL00449):

Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)

North Carolina(444), Texas(T104704468-TX), Illinois(002295)



30-APR-10

Project Manager: **Gregory Bosiljcic**
Sovereign Consulting, Inc. (NY)
3104 Unionville Road, Suite 150
Cranberry Twp, PA 16066

Reference: XENCO Report No: **369409**
25 Paidge Avenue
Project Address: Brooklyn, NY

Gregory Bosiljcic:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 369409. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 369409 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



Sample Cross Reference 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-1	W	Apr-15-10 07:00		369409-001
MW-3	W	Apr-15-10 07:15		369409-002
MW-29	W	Apr-15-10 07:30		369409-003
MW-5	W	Apr-15-10 07:45		369409-004
MW-28	W	Apr-15-10 07:55		369409-005
MW-27	W	Apr-15-10 08:00		369409-006
MW-6	W	Apr-15-10 08:10		369409-007
MW-7R	W	Apr-15-10 08:20		369409-008
MW-8	W	Apr-15-10 08:30		369409-009
MW-9	W	Apr-15-10 08:40		369409-010
MW-21R	W	Apr-15-10 08:50		369409-011
MW-22R	W	Apr-15-10 09:00		369409-012
MW-13	W	Apr-15-10 09:10		369409-013
MW-14	W	Apr-15-10 09:20		369409-014
MW-23	W	Apr-15-10 09:30		369409-015
MW-24	W	Apr-15-10 09:40		369409-016
MW-43	W	Apr-15-10 09:50		369409-017
MW-42	W	Apr-15-10 10:00		369409-018
MW-44	W	Apr-15-10 10:10		369409-019
MW-30	W	Apr-15-10 10:20		369409-020
MW-25	W	Apr-15-10 10:30		369409-021
TRW-2	W	Apr-15-10 10:40		369409-022
MW-20	W	Apr-15-10 10:50		369409-023
MW-15	W	Apr-15-10 11:00		369409-024
MW-16	W	Apr-15-10 11:10		369409-025
MW-17	W	Apr-15-10 11:20		369409-026
MW-19	W	Apr-15-10 11:30		369409-027
MW-32	W	Apr-15-10 11:40		369409-028
MW-33	W	Apr-15-10 11:50		369409-029
MW-39	W	Apr-15-10 12:00		369409-030
MW-35	W	Apr-15-10 12:10		369409-031
MW-38	W	Apr-15-10 12:20		369409-032
MW-18	W	Apr-15-10 12:30		369409-033
Trip Blank	W	Apr-15-10 00:00		369409-034
Field Blank	W	Apr-15-10 07:00		369409-035



CASE NARRATIVE

Client Name: Sovereign Consulting, Inc. (NY)

Project Name: 25 Paidge Avenue



Project ID: EQ24
Work Order Number: 369409

Report Date: 30-APR-10
Date Received: 04/16/2010

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-803446 VOAs by SW-846 8260B
SW8260B

Batch 803446, Trichlorofluoromethane recovered above QC limits in the laboratory control sample. Any hits would be considered as biased high; however, there are no hits reporting for this compound for the affected sample.

Samples affected are: 369409-002, -001.

Batch: LBA-803645 VOAs by SW-846 8260B
SW8260B

Batch 803645, n-Propylbenzene recovered below QC limits in the Matrix Spike Duplicate.

Samples affected are: 369409-003.

The Laboratory Control Sample for n-Propylbenzene is within laboratory Control Limits

SW8260B

Batch 803645, Methylene Chloride recovered below QC limits in the laboratory control sample. Any hits would be considered as biased low; however, there are no hits reporting for this compound for the affected sample. The Laboratory Control Sample passes due to Nelac Quality Systems, Appendix D, Marginal Exceedences.

Samples affected are: 369409-003.

Batch: LBA-803828 VOAs by SW-846 8260B
SW8260B

Batch 803828, Toluene-D8 recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis

Samples affected are: 369409-012.



CASE NARRATIVE

Client Name: Sovereign Consulting, Inc. (NY)

Project Name: 25 Paidge Avenue



Project ID: EQ24
Work Order Number: 369409

Report Date: 30-APR-10
Date Received: 04/16/2010

Batch: LBA-804058 VOAs by SW-846 8260B
SW8260B

Batch 804058, Vinyl Chloride recovered below QC limits in the Matrix Spike.
Samples affected are: 369409-025.
The Laboratory Control Sample for Vinyl Chloride is within laboratory Control Limits

Batch: LBA-804067 VOAs by SW-846 8260B
None

Batch: LBA-804536 VOAs by SW-846 8260B
None



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-1
Lab Sample Id: 369409-001

Matrix: Water
Date Collected: Apr-15-10 07:00
Date Received: Apr-16-10 09:00

% Moisture:

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803446

Date Prep: Apr-20-10 19:12

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/20/10 20:50		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/20/10 20:50		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/20/10 20:50		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/20/10 20:50		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/20/10 20:50		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/20/10 20:50		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/20/10 20:50		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/20/10 20:50		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/20/10 20:50		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/20/10 20:50		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/20/10 20:50		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/20/10 20:50		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/20/10 20:50		1
Chloroform	67-66-3	7.96	5.00		ug/L	04/20/10 20:50		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/20/10 20:50		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/20/10 20:50		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/20/10 20:50		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/20/10 20:50		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/20/10 20:50		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/20/10 20:50		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/20/10 20:50		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/20/10 20:50		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/20/10 20:50		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/20/10 20:50		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/20/10 20:50		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/20/10 20:50		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/20/10 20:50		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/20/10 20:50		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/20/10 20:50		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/20/10 20:50		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/20/10 20:50		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/20/10 20:50		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/20/10 20:50		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/20/10 20:50		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/20/10 20:50		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/20/10 20:50		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/20/10 20:50		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/20/10 20:50		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/20/10 20:50		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-1	Matrix: Water	% Moisture:
Lab Sample Id: 369409-001	Date Collected: Apr-15-10 07:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803446

Date Prep: Apr-20-10 19:12

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/20/10 20:50		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/20/10 20:50		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/20/10 20:50		1
Styrene	100-42-5	BRL	5.00		ug/L	04/20/10 20:50		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/20/10 20:50		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/20/10 20:50		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/20/10 20:50		1
Toluene	108-88-3	BRL	5.00		ug/L	04/20/10 20:50		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/20/10 20:50		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/20/10 20:50		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/20/10 20:50		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/20/10 20:50		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/20/10 20:50		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/20/10 20:50		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/20/10 20:50		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/20/10 20:50		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/20/10 20:50		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/20/10 20:50		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/20/10 20:50		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/20/10 20:50		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/20/10 20:50		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-3	Matrix: Water	% Moisture:
Lab Sample Id: 369409-002	Date Collected: Apr-15-10 07:15	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803446

Date Prep: Apr-20-10 20:30

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/21/10 05:05		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/21/10 05:05		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/21/10 05:05		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/21/10 05:05		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/21/10 05:05		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/21/10 05:05		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/21/10 05:05		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/21/10 05:05		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/21/10 05:05		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/21/10 05:05		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/21/10 05:05		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/21/10 05:05		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/21/10 05:05		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/21/10 05:05		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/21/10 05:05		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/21/10 05:05		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/21/10 05:05		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/21/10 05:05		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/21/10 05:05		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/21/10 05:05		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/21/10 05:05		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/21/10 05:05		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/21/10 05:05		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/21/10 05:05		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/21/10 05:05		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/21/10 05:05		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/21/10 05:05		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/21/10 05:05		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/21/10 05:05		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/21/10 05:05		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/21/10 05:05		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/21/10 05:05		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/21/10 05:05		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/21/10 05:05		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/21/10 05:05		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/21/10 05:05		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/21/10 05:05		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/21/10 05:05		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/21/10 05:05		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-3	Matrix: Water	% Moisture:
Lab Sample Id: 369409-002	Date Collected: Apr-15-10 07:15	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803446

Date Prep: Apr-20-10 20:30

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/21/10 05:05		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/21/10 05:05		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/21/10 05:05		1
Styrene	100-42-5	BRL	5.00		ug/L	04/21/10 05:05		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/21/10 05:05		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/21/10 05:05		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/21/10 05:05		1
Toluene	108-88-3	BRL	5.00		ug/L	04/21/10 05:05		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/21/10 05:05		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/21/10 05:05		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/21/10 05:05		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/21/10 05:05		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/21/10 05:05		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/21/10 05:05		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/21/10 05:05		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/21/10 05:05		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/21/10 05:05		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/21/10 05:05		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/21/10 05:05		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/21/10 05:05		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/21/10 05:05		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-29	Matrix: Water	% Moisture:
Lab Sample Id: 369409-003	Date Collected: Apr-15-10 07:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803645

Date Prep: Apr-21-10 13:30

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	122	5.00		ug/L	04/21/10 13:58		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/21/10 13:58		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/21/10 13:58		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/21/10 13:58		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/21/10 13:58		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/21/10 13:58		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/21/10 13:58		1
n-Butylbenzene	104-51-8	10.9	5.00		ug/L	04/21/10 13:58		1
Sec-Butylbenzene	135-98-8	7.19	5.00		ug/L	04/21/10 13:58		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/21/10 13:58		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/21/10 13:58		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/21/10 13:58		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/21/10 13:58		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/21/10 13:58		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/21/10 13:58		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/21/10 13:58		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/21/10 13:58		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/21/10 13:58		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/21/10 13:58		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/21/10 13:58		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/21/10 13:58		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/21/10 13:58		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/21/10 13:58		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/21/10 13:58		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/21/10 13:58		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/21/10 13:58		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/21/10 13:58		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/21/10 13:58		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/21/10 13:58		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/21/10 13:58		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/21/10 13:58		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/21/10 13:58		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/21/10 13:58		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/21/10 13:58		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/21/10 13:58		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/21/10 13:58		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/21/10 13:58		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/21/10 13:58		1
isopropylbenzene	98-82-8	63.1	5.00		ug/L	04/21/10 13:58		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-29	Matrix: Water	% Moisture:
Lab Sample Id: 369409-003	Date Collected: Apr-15-10 07:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803645

Date Prep: Apr-21-10 13:30

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/21/10 13:58		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/21/10 13:58		1
n-Propylbenzene	103-65-1	107	5.00		ug/L	04/21/10 13:58		1
Styrene	100-42-5	BRL	5.00		ug/L	04/21/10 13:58		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/21/10 13:58		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/21/10 13:58		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/21/10 13:58		1
Toluene	108-88-3	BRL	5.00		ug/L	04/21/10 13:58		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/21/10 13:58		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/21/10 13:58		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/21/10 13:58		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/21/10 13:58		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/21/10 13:58		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/21/10 13:58		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/21/10 13:58		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/21/10 13:58		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/21/10 13:58		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/21/10 13:58		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/21/10 13:58		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/21/10 13:58		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/21/10 13:58		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-5	Matrix: Water	% Moisture:
Lab Sample Id: 369409-004	Date Collected: Apr-15-10 07:45	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **803828**

Date Prep: **Apr-22-10 15:06**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/22/10 16:14		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 16:14		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 16:14		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 16:14		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 16:14		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 16:14		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/22/10 16:14		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/22/10 16:14		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/22/10 16:14		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 16:14		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 16:14		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 16:14		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 16:14		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 16:14		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 16:14		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 16:14		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 16:14		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/22/10 16:14		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 16:14		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 16:14		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 16:14		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 16:14		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 16:14		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 16:14		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 16:14		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 16:14		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 16:14		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 16:14		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 16:14		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 16:14		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 16:14		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 16:14		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 16:14		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 16:14		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 16:14		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 16:14		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/22/10 16:14		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 16:14		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/22/10 16:14		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-5	Matrix: Water	% Moisture:
Lab Sample Id: 369409-004	Date Collected: Apr-15-10 07:45	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 15:06

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 16:14		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/22/10 16:14		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/22/10 16:14		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 16:14		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 16:14		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 16:14		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 16:14		1
Toluene	108-88-3	BRL	5.00		ug/L	04/22/10 16:14		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 16:14		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 16:14		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 16:14		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 16:14		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 16:14		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 16:14		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 16:14		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/22/10 16:14		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/22/10 16:14		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/22/10 16:14		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/22/10 16:14		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 16:14		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/22/10 16:14		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-28	Matrix: Water	% Moisture:
Lab Sample Id: 369409-005	Date Collected: Apr-15-10 07:55	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 18:56

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/22/10 19:33		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 19:33		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 19:33		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 19:33		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 19:33		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 19:33		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/22/10 19:33		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/22/10 19:33		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/22/10 19:33		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 19:33		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 19:33		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 19:33		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 19:33		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 19:33		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 19:33		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 19:33		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 19:33		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/22/10 19:33		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 19:33		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 19:33		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 19:33		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 19:33		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 19:33		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 19:33		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 19:33		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 19:33		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 19:33		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 19:33		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 19:33		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 19:33		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 19:33		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 19:33		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 19:33		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 19:33		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 19:33		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 19:33		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/22/10 19:33		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 19:33		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/22/10 19:33		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-28	Matrix: Water	% Moisture:
Lab Sample Id: 369409-005	Date Collected: Apr-15-10 07:55	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 18:56

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 19:33		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/22/10 19:33		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/22/10 19:33		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 19:33		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 19:33		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 19:33		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 19:33		1
Toluene	108-88-3	BRL	5.00		ug/L	04/22/10 19:33		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 19:33		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 19:33		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 19:33		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 19:33		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 19:33		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 19:33		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 19:33		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/22/10 19:33		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/22/10 19:33		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/22/10 19:33		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/22/10 19:33		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 19:33		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/22/10 19:33		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-27
Lab Sample Id: 369409-006

Matrix: Water
Date Collected: Apr-15-10 08:00
Date Received: Apr-16-10 09:00

% Moisture:

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 18:58

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/22/10 19:55		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 19:55		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 19:55		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 19:55		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 19:55		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 19:55		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/22/10 19:55		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/22/10 19:55		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/22/10 19:55		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 19:55		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 19:55		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 19:55		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 19:55		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 19:55		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 19:55		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 19:55		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 19:55		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/22/10 19:55		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 19:55		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 19:55		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 19:55		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 19:55		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 19:55		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 19:55		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 19:55		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 19:55		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 19:55		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 19:55		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 19:55		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 19:55		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 19:55		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 19:55		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 19:55		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 19:55		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 19:55		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 19:55		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/22/10 19:55		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 19:55		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/22/10 19:55		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-27	Matrix: Water	% Moisture:
Lab Sample Id: 369409-006	Date Collected: Apr-15-10 08:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 18:58

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 19:55		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/22/10 19:55		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/22/10 19:55		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 19:55		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 19:55		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 19:55		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 19:55		1
Toluene	108-88-3	BRL	5.00		ug/L	04/22/10 19:55		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 19:55		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 19:55		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 19:55		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 19:55		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 19:55		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 19:55		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 19:55		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/22/10 19:55		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/22/10 19:55		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/22/10 19:55		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/22/10 19:55		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 19:55		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/22/10 19:55		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-6	Matrix: Water	% Moisture:
Lab Sample Id: 369409-007	Date Collected: Apr-15-10 08:10	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:00

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/22/10 20:17		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 20:17		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 20:17		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 20:17		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 20:17		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 20:17		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/22/10 20:17		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/22/10 20:17		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/22/10 20:17		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 20:17		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 20:17		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 20:17		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 20:17		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 20:17		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 20:17		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 20:17		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 20:17		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/22/10 20:17		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 20:17		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 20:17		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 20:17		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 20:17		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 20:17		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 20:17		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 20:17		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 20:17		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 20:17		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 20:17		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 20:17		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 20:17		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 20:17		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 20:17		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 20:17		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 20:17		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 20:17		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 20:17		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/22/10 20:17		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 20:17		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/22/10 20:17		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-6	Matrix: Water	% Moisture:
Lab Sample Id: 369409-007	Date Collected: Apr-15-10 08:10	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:00

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 20:17		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/22/10 20:17		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/22/10 20:17		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 20:17		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 20:17		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 20:17		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 20:17		1
Toluene	108-88-3	BRL	5.00		ug/L	04/22/10 20:17		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 20:17		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 20:17		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 20:17		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 20:17		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 20:17		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 20:17		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 20:17		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/22/10 20:17		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/22/10 20:17		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/22/10 20:17		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/22/10 20:17		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 20:17		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/22/10 20:17		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-7R	Matrix: Water	% Moisture:
Lab Sample Id: 369409-008	Date Collected: Apr-15-10 08:20	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:02

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	16.9	5.00		ug/L	04/22/10 20:39		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 20:39		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 20:39		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 20:39		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 20:39		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 20:39		1
MTBE	1634-04-4	31.5	5.00		ug/L	04/22/10 20:39		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/22/10 20:39		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/22/10 20:39		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 20:39		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 20:39		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 20:39		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 20:39		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 20:39		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 20:39		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 20:39		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 20:39		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/22/10 20:39		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 20:39		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 20:39		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 20:39		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 20:39		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 20:39		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 20:39		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 20:39		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 20:39		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 20:39		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 20:39		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 20:39		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 20:39		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 20:39		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 20:39		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 20:39		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 20:39		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 20:39		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 20:39		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/22/10 20:39		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 20:39		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/22/10 20:39		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-7R	Matrix: Water	% Moisture:
Lab Sample Id: 369409-008	Date Collected: Apr-15-10 08:20	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:02

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 20:39		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/22/10 20:39		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/22/10 20:39		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 20:39		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 20:39		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 20:39		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 20:39		1
Toluene	108-88-3	BRL	5.00		ug/L	04/22/10 20:39		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 20:39		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 20:39		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 20:39		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 20:39		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 20:39		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 20:39		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 20:39		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/22/10 20:39		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/22/10 20:39		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/22/10 20:39		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/22/10 20:39		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 20:39		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/22/10 20:39		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-8	Matrix: Water	% Moisture:
Lab Sample Id: 369409-009	Date Collected: Apr-15-10 08:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:04

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	44.9	5.00		ug/L	04/22/10 21:01		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 21:01		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 21:01		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 21:01		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 21:01		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 21:01		1
MTBE	1634-04-4	37.6	5.00		ug/L	04/22/10 21:01		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/22/10 21:01		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/22/10 21:01		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 21:01		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 21:01		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 21:01		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 21:01		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 21:01		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 21:01		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 21:01		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 21:01		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/22/10 21:01		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 21:01		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 21:01		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 21:01		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 21:01		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 21:01		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 21:01		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 21:01		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 21:01		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 21:01		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 21:01		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 21:01		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 21:01		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 21:01		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 21:01		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 21:01		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 21:01		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 21:01		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 21:01		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/22/10 21:01		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 21:01		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/22/10 21:01		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-8	Matrix: Water	% Moisture:
Lab Sample Id: 369409-009	Date Collected: Apr-15-10 08:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **803828**

Date Prep: **Apr-22-10 19:04**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 21:01		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/22/10 21:01		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/22/10 21:01		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 21:01		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 21:01		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 21:01		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 21:01		1
Toluene	108-88-3	BRL	5.00		ug/L	04/22/10 21:01		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 21:01		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 21:01		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 21:01		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 21:01		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 21:01		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 21:01		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 21:01		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/22/10 21:01		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/22/10 21:01		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/22/10 21:01		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/22/10 21:01		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 21:01		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/22/10 21:01		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-9	Matrix: Water	% Moisture:
Lab Sample Id: 369409-010	Date Collected: Apr-15-10 08:40	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **803828**

Date Prep: **Apr-22-10 19:06**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	12.5	5.00		ug/L	04/22/10 21:23		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 21:23		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 21:23		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 21:23		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 21:23		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 21:23		1
MTBE	1634-04-4	15.2	5.00		ug/L	04/22/10 21:23		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/22/10 21:23		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/22/10 21:23		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 21:23		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 21:23		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 21:23		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 21:23		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 21:23		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 21:23		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 21:23		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 21:23		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/22/10 21:23		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 21:23		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 21:23		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 21:23		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 21:23		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 21:23		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 21:23		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 21:23		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 21:23		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 21:23		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 21:23		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 21:23		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 21:23		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 21:23		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 21:23		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 21:23		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 21:23		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 21:23		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 21:23		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/22/10 21:23		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 21:23		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/22/10 21:23		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-9	Matrix: Water	% Moisture:
Lab Sample Id: 369409-010	Date Collected: Apr-15-10 08:40	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **803828**

Date Prep: **Apr-22-10 19:06**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 21:23		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/22/10 21:23		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/22/10 21:23		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 21:23		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 21:23		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 21:23		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 21:23		1
Toluene	108-88-3	BRL	5.00		ug/L	04/22/10 21:23		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 21:23		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 21:23		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 21:23		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 21:23		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 21:23		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 21:23		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 21:23		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/22/10 21:23		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/22/10 21:23		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/22/10 21:23		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/22/10 21:23		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 21:23		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/22/10 21:23		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-21R	Matrix: Water	% Moisture:
Lab Sample Id: 369409-011	Date Collected: Apr-15-10 08:50	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:08

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	139	5.00		ug/L	04/22/10 21:45		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 21:45		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 21:45		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 21:45		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 21:45		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 21:45		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/22/10 21:45		1
n-Butylbenzene	104-51-8	11.0	5.00		ug/L	04/22/10 21:45		1
Sec-Butylbenzene	135-98-8	29.9	5.00		ug/L	04/22/10 21:45		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 21:45		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 21:45		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 21:45		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 21:45		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 21:45		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 21:45		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 21:45		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 21:45		1
p-Cymene (p-Isopropyltoluene)	99-87-6	5.29	5.00		ug/L	04/22/10 21:45		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 21:45		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 21:45		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 21:45		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 21:45		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 21:45		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 21:45		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 21:45		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 21:45		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 21:45		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 21:45		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 21:45		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 21:45		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 21:45		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 21:45		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 21:45		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 21:45		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 21:45		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 21:45		1
Ethylbenzene	100-41-4	41.5	5.00		ug/L	04/22/10 21:45		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 21:45		1
isopropylbenzene	98-82-8	145	5.00		ug/L	04/22/10 21:45		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-21R	Matrix: Water	% Moisture:
Lab Sample Id: 369409-011	Date Collected: Apr-15-10 08:50	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:08

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 21:45		1
Naphthalene	91-20-3	20.0	10.0		ug/L	04/22/10 21:45		1
n-Propylbenzene	103-65-1	34.0	5.00		ug/L	04/22/10 21:45		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 21:45		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 21:45		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 21:45		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 21:45		1
Toluene	108-88-3	12.2	5.00		ug/L	04/22/10 21:45		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 21:45		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 21:45		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 21:45		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 21:45		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 21:45		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 21:45		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 21:45		1
1,2,4-Trimethylbenzene	95-63-6	133	5.00		ug/L	04/22/10 21:45		1
1,3,5-Trimethylbenzene	108-67-8	139	5.00		ug/L	04/22/10 21:45		1
o-Xylene	95-47-6	16.9	5.00		ug/L	04/22/10 21:45		1
m,p-Xylenes	179601-23-1	37.7	10.0		ug/L	04/22/10 21:45		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 21:45		1
Total Xylenes	1330-20-7	54.6	5.00		ug/L	04/22/10 21:45		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-22R	Matrix: Water	% Moisture:
Lab Sample Id: 369409-012	Date Collected: Apr-15-10 09:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **803828**

Date Prep: **Apr-22-10 19:10**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	386	25.0		ug/L	04/23/10 19:36	D	5
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 22:07		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 22:07		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 22:07		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 22:07		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 22:07		1
MTBE	1634-04-4	42.8	5.00		ug/L	04/22/10 22:07		1
n-Butylbenzene	104-51-8	29.9	5.00		ug/L	04/22/10 22:07		1
Sec-Butylbenzene	135-98-8	19.2	5.00		ug/L	04/22/10 22:07		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 22:07		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 22:07		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 22:07		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 22:07		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 22:07		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 22:07		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 22:07		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 22:07		1
p-Cymene (p-Isopropyltoluene)	99-87-6	6.61	5.00		ug/L	04/22/10 22:07		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 22:07		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 22:07		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 22:07		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 22:07		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 22:07		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 22:07		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 22:07		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 22:07		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 22:07		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 22:07		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 22:07		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 22:07		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 22:07		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 22:07		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 22:07		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 22:07		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 22:07		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 22:07		1
Ethylbenzene	100-41-4	2140	100		ug/L	04/23/10 19:58	D	20
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 22:07		1
isopropylbenzene	98-82-8	217	25.0		ug/L	04/23/10 19:36	D	5

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-22R	Matrix: Water	% Moisture:
Lab Sample Id: 369409-012	Date Collected: Apr-15-10 09:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:10

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 22:07		1
Naphthalene	91-20-3	412	50.0		ug/L	04/23/10 19:36	D	5
n-Propylbenzene	103-65-1	426	25.0		ug/L	04/23/10 19:36	D	5
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 22:07		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 22:07		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 22:07		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 22:07		1
Toluene	108-88-3	68.4	5.00		ug/L	04/22/10 22:07		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 22:07		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 22:07		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 22:07		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 22:07		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 22:07		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 22:07		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 22:07		1
1,2,4-Trimethylbenzene	95-63-6	14.6	5.00		ug/L	04/22/10 22:07		1
1,3,5-Trimethylbenzene	108-67-8	217	25.0		ug/L	04/23/10 19:36	D	5
o-Xylene	95-47-6	22.9	5.00		ug/L	04/22/10 22:07		1
m,p-Xylenes	179601-23-1	88.3	10.0		ug/L	04/22/10 22:07		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 22:07		1
Total Xylenes	1330-20-7	111.2	5.00		ug/L	04/22/10 22:07		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-13	Matrix: Water	% Moisture:
Lab Sample Id: 369409-013	Date Collected: Apr-15-10 09:10	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:14

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/22/10 22:51		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 22:51		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 22:51		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 22:51		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 22:51		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 22:51		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/22/10 22:51		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/22/10 22:51		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/22/10 22:51		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 22:51		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 22:51		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 22:51		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 22:51		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 22:51		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 22:51		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 22:51		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 22:51		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/22/10 22:51		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 22:51		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 22:51		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 22:51		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 22:51		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 22:51		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 22:51		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 22:51		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 22:51		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 22:51		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 22:51		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 22:51		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 22:51		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 22:51		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 22:51		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 22:51		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 22:51		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 22:51		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 22:51		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/22/10 22:51		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 22:51		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/22/10 22:51		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-13	Matrix: Water	% Moisture:
Lab Sample Id: 369409-013	Date Collected: Apr-15-10 09:10	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:14

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 22:51		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/22/10 22:51		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/22/10 22:51		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 22:51		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 22:51		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 22:51		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 22:51		1
Toluene	108-88-3	BRL	5.00		ug/L	04/22/10 22:51		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 22:51		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 22:51		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 22:51		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 22:51		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 22:51		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 22:51		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 22:51		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/22/10 22:51		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/22/10 22:51		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/22/10 22:51		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/22/10 22:51		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 22:51		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/22/10 22:51		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-14	Matrix: Water	% Moisture:
Lab Sample Id: 369409-014	Date Collected: Apr-15-10 09:20	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:16

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/22/10 23:13		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 23:13		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 23:13		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 23:13		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 23:13		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 23:13		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/22/10 23:13		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/22/10 23:13		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/22/10 23:13		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 23:13		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 23:13		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 23:13		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 23:13		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 23:13		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 23:13		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 23:13		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 23:13		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/22/10 23:13		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 23:13		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 23:13		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 23:13		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 23:13		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 23:13		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 23:13		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 23:13		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 23:13		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 23:13		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 23:13		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 23:13		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 23:13		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 23:13		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 23:13		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 23:13		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 23:13		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 23:13		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 23:13		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/22/10 23:13		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 23:13		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/22/10 23:13		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-14	Matrix: Water	% Moisture:
Lab Sample Id: 369409-014	Date Collected: Apr-15-10 09:20	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:16

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 23:13		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/22/10 23:13		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/22/10 23:13		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 23:13		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 23:13		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 23:13		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 23:13		1
Toluene	108-88-3	BRL	5.00		ug/L	04/22/10 23:13		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 23:13		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 23:13		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 23:13		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 23:13		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 23:13		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 23:13		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 23:13		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/22/10 23:13		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/22/10 23:13		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/22/10 23:13		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/22/10 23:13		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 23:13		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/22/10 23:13		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-23	Matrix: Water	% Moisture:
Lab Sample Id: 369409-015	Date Collected: Apr-15-10 09:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:18

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/22/10 23:35		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 23:35		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 23:35		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 23:35		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 23:35		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 23:35		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/22/10 23:35		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/22/10 23:35		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/22/10 23:35		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 23:35		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 23:35		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 23:35		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 23:35		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 23:35		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 23:35		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 23:35		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 23:35		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/22/10 23:35		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 23:35		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 23:35		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 23:35		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 23:35		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 23:35		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 23:35		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 23:35		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 23:35		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 23:35		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 23:35		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 23:35		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 23:35		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 23:35		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 23:35		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 23:35		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 23:35		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 23:35		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 23:35		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/22/10 23:35		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 23:35		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/22/10 23:35		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-23	Matrix: Water	% Moisture:
Lab Sample Id: 369409-015	Date Collected: Apr-15-10 09:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:18

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 23:35		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/22/10 23:35		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/22/10 23:35		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 23:35		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 23:35		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 23:35		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 23:35		1
Toluene	108-88-3	BRL	5.00		ug/L	04/22/10 23:35		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 23:35		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 23:35		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 23:35		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 23:35		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 23:35		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 23:35		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 23:35		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/22/10 23:35		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/22/10 23:35		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/22/10 23:35		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/22/10 23:35		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 23:35		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/22/10 23:35		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-24	Matrix: Water	% Moisture:
Lab Sample Id: 369409-016	Date Collected: Apr-15-10 09:40	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE	Date Prep: Apr-22-10 19:20	Tech: CYE
Seq Number: 803828		

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/22/10 23:57		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/22/10 23:57		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/22/10 23:57		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/22/10 23:57		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/22/10 23:57		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/22/10 23:57		1
MTBE	1634-04-4	6.63	5.00		ug/L	04/22/10 23:57		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/22/10 23:57		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/22/10 23:57		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/22/10 23:57		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/22/10 23:57		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/22/10 23:57		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/22/10 23:57		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/22/10 23:57		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/22/10 23:57		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/22/10 23:57		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/22/10 23:57		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/22/10 23:57		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/22/10 23:57		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/22/10 23:57		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/22/10 23:57		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/22/10 23:57		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/22/10 23:57		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/22/10 23:57		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/22/10 23:57		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/22/10 23:57		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/22/10 23:57		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/22/10 23:57		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/22/10 23:57		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/22/10 23:57		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/22/10 23:57		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/22/10 23:57		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/22/10 23:57		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/22/10 23:57		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/22/10 23:57		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/22/10 23:57		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/22/10 23:57		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/22/10 23:57		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/22/10 23:57		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-24	Matrix: Water	% Moisture:
Lab Sample Id: 369409-016	Date Collected: Apr-15-10 09:40	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 803828

Date Prep: Apr-22-10 19:20

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/22/10 23:57		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/22/10 23:57		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/22/10 23:57		1
Styrene	100-42-5	BRL	5.00		ug/L	04/22/10 23:57		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/22/10 23:57		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/22/10 23:57		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/22/10 23:57		1
Toluene	108-88-3	BRL	5.00		ug/L	04/22/10 23:57		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/22/10 23:57		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/22/10 23:57		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/22/10 23:57		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/22/10 23:57		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/22/10 23:57		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/22/10 23:57		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/22/10 23:57		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/22/10 23:57		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/22/10 23:57		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/22/10 23:57		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/22/10 23:57		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/22/10 23:57		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/22/10 23:57		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-43	Matrix: Water	% Moisture:
Lab Sample Id: 369409-017	Date Collected: Apr-15-10 09:50	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE	Date Prep: Apr-23-10 15:48	Tech: CYE
Seq Number: 804067		

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/23/10 17:23		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/23/10 17:23		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/23/10 17:23		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/23/10 17:23		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/23/10 17:23		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/23/10 17:23		1
MTBE	1634-04-4	17.5	5.00		ug/L	04/23/10 17:23		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/23/10 17:23		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/23/10 17:23		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/23/10 17:23		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/23/10 17:23		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/23/10 17:23		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/23/10 17:23		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/23/10 17:23		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/23/10 17:23		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/23/10 17:23		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/23/10 17:23		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/23/10 17:23		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/23/10 17:23		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/23/10 17:23		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/23/10 17:23		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/23/10 17:23		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/23/10 17:23		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/23/10 17:23		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/23/10 17:23		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/23/10 17:23		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/23/10 17:23		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/23/10 17:23		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/23/10 17:23		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/23/10 17:23		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/23/10 17:23		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/23/10 17:23		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/23/10 17:23		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/23/10 17:23		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/23/10 17:23		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/23/10 17:23		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/23/10 17:23		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/23/10 17:23		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/23/10 17:23		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-43	Matrix: Water	% Moisture:
Lab Sample Id: 369409-017	Date Collected: Apr-15-10 09:50	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 15:48

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/23/10 17:23		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/23/10 17:23		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/23/10 17:23		1
Styrene	100-42-5	BRL	5.00		ug/L	04/23/10 17:23		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/23/10 17:23		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/23/10 17:23		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/23/10 17:23		1
Toluene	108-88-3	BRL	5.00		ug/L	04/23/10 17:23		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/23/10 17:23		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/23/10 17:23		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/23/10 17:23		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/23/10 17:23		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/23/10 17:23		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/23/10 17:23		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/23/10 17:23		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/23/10 17:23		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/23/10 17:23		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/23/10 17:23		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/23/10 17:23		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/23/10 17:23		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/23/10 17:23		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-42	Matrix: Water	% Moisture:
Lab Sample Id: 369409-018	Date Collected: Apr-15-10 10:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 18:46

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/23/10 20:20		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/23/10 20:20		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/23/10 20:20		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/23/10 20:20		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/23/10 20:20		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/23/10 20:20		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/23/10 20:20		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/23/10 20:20		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/23/10 20:20		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/23/10 20:20		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/23/10 20:20		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/23/10 20:20		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/23/10 20:20		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/23/10 20:20		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/23/10 20:20		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/23/10 20:20		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/23/10 20:20		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/23/10 20:20		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/23/10 20:20		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/23/10 20:20		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/23/10 20:20		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/23/10 20:20		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/23/10 20:20		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/23/10 20:20		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/23/10 20:20		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/23/10 20:20		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/23/10 20:20		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/23/10 20:20		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/23/10 20:20		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/23/10 20:20		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/23/10 20:20		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/23/10 20:20		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/23/10 20:20		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/23/10 20:20		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/23/10 20:20		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/23/10 20:20		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/23/10 20:20		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/23/10 20:20		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/23/10 20:20		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-42	Matrix: Water	% Moisture:
Lab Sample Id: 369409-018	Date Collected: Apr-15-10 10:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 18:46

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/23/10 20:20		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/23/10 20:20		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/23/10 20:20		1
Styrene	100-42-5	BRL	5.00		ug/L	04/23/10 20:20		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/23/10 20:20		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/23/10 20:20		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/23/10 20:20		1
Toluene	108-88-3	BRL	5.00		ug/L	04/23/10 20:20		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/23/10 20:20		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/23/10 20:20		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/23/10 20:20		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/23/10 20:20		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/23/10 20:20		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/23/10 20:20		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/23/10 20:20		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/23/10 20:20		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/23/10 20:20		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/23/10 20:20		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/23/10 20:20		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/23/10 20:20		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/23/10 20:20		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-44	Matrix: Water	% Moisture:
Lab Sample Id: 369409-019	Date Collected: Apr-15-10 10:10	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804067**

Date Prep: **Apr-23-10 18:48**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/23/10 20:42		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/23/10 20:42		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/23/10 20:42		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/23/10 20:42		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/23/10 20:42		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/23/10 20:42		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/23/10 20:42		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/23/10 20:42		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/23/10 20:42		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/23/10 20:42		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/23/10 20:42		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/23/10 20:42		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/23/10 20:42		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/23/10 20:42		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/23/10 20:42		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/23/10 20:42		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/23/10 20:42		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/23/10 20:42		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/23/10 20:42		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/23/10 20:42		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/23/10 20:42		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/23/10 20:42		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/23/10 20:42		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/23/10 20:42		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/23/10 20:42		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/23/10 20:42		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/23/10 20:42		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/23/10 20:42		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/23/10 20:42		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/23/10 20:42		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/23/10 20:42		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/23/10 20:42		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/23/10 20:42		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/23/10 20:42		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/23/10 20:42		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/23/10 20:42		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/23/10 20:42		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/23/10 20:42		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/23/10 20:42		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-44	Matrix: Water	% Moisture:
Lab Sample Id: 369409-019	Date Collected: Apr-15-10 10:10	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE** Date Prep: **Apr-23-10 18:48** Tech: **CYE**
Seq Number: **804067**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/23/10 20:42		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/23/10 20:42		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/23/10 20:42		1
Styrene	100-42-5	BRL	5.00		ug/L	04/23/10 20:42		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/23/10 20:42		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/23/10 20:42		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/23/10 20:42		1
Toluene	108-88-3	BRL	5.00		ug/L	04/23/10 20:42		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/23/10 20:42		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/23/10 20:42		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/23/10 20:42		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/23/10 20:42		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/23/10 20:42		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/23/10 20:42		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/23/10 20:42		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/23/10 20:42		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/23/10 20:42		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/23/10 20:42		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/23/10 20:42		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/23/10 20:42		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/23/10 20:42		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-30	Matrix: Water	% Moisture:
Lab Sample Id: 369409-020	Date Collected: Apr-15-10 10:20	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE	Date Prep: Apr-23-10 18:50	Tech: CYE
Seq Number: 804067		

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/23/10 21:04		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/23/10 21:04		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/23/10 21:04		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/23/10 21:04		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/23/10 21:04		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/23/10 21:04		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/23/10 21:04		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/23/10 21:04		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/23/10 21:04		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/23/10 21:04		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/23/10 21:04		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/23/10 21:04		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/23/10 21:04		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/23/10 21:04		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/23/10 21:04		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/23/10 21:04		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/23/10 21:04		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/23/10 21:04		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/23/10 21:04		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/23/10 21:04		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/23/10 21:04		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/23/10 21:04		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/23/10 21:04		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/23/10 21:04		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/23/10 21:04		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/23/10 21:04		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/23/10 21:04		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/23/10 21:04		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/23/10 21:04		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/23/10 21:04		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/23/10 21:04		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/23/10 21:04		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/23/10 21:04		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/23/10 21:04		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/23/10 21:04		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/23/10 21:04		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/23/10 21:04		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/23/10 21:04		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/23/10 21:04		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-30	Matrix: Water	% Moisture:
Lab Sample Id: 369409-020	Date Collected: Apr-15-10 10:20	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 18:50

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/23/10 21:04		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/23/10 21:04		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/23/10 21:04		1
Styrene	100-42-5	BRL	5.00		ug/L	04/23/10 21:04		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/23/10 21:04		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/23/10 21:04		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/23/10 21:04		1
Toluene	108-88-3	BRL	5.00		ug/L	04/23/10 21:04		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/23/10 21:04		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/23/10 21:04		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/23/10 21:04		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/23/10 21:04		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/23/10 21:04		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/23/10 21:04		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/23/10 21:04		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/23/10 21:04		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/23/10 21:04		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/23/10 21:04		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/23/10 21:04		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/23/10 21:04		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/23/10 21:04		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-25	Matrix: Water	% Moisture:
Lab Sample Id: 369409-021	Date Collected: Apr-15-10 10:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 18:52

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/23/10 21:26		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/23/10 21:26		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/23/10 21:26		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/23/10 21:26		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/23/10 21:26		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/23/10 21:26		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/23/10 21:26		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/23/10 21:26		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/23/10 21:26		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/23/10 21:26		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/23/10 21:26		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/23/10 21:26		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/23/10 21:26		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/23/10 21:26		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/23/10 21:26		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/23/10 21:26		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/23/10 21:26		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/23/10 21:26		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/23/10 21:26		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/23/10 21:26		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/23/10 21:26		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/23/10 21:26		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/23/10 21:26		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/23/10 21:26		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/23/10 21:26		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/23/10 21:26		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/23/10 21:26		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/23/10 21:26		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/23/10 21:26		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/23/10 21:26		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/23/10 21:26		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/23/10 21:26		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/23/10 21:26		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/23/10 21:26		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/23/10 21:26		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/23/10 21:26		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/23/10 21:26		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/23/10 21:26		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/23/10 21:26		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-25	Matrix: Water	% Moisture:
Lab Sample Id: 369409-021	Date Collected: Apr-15-10 10:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804067**

Date Prep: **Apr-23-10 18:52**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/23/10 21:26		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/23/10 21:26		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/23/10 21:26		1
Styrene	100-42-5	BRL	5.00		ug/L	04/23/10 21:26		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/23/10 21:26		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/23/10 21:26		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/23/10 21:26		1
Toluene	108-88-3	BRL	5.00		ug/L	04/23/10 21:26		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/23/10 21:26		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/23/10 21:26		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/23/10 21:26		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/23/10 21:26		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/23/10 21:26		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/23/10 21:26		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/23/10 21:26		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/23/10 21:26		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/23/10 21:26		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/23/10 21:26		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/23/10 21:26		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/23/10 21:26		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/23/10 21:26		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: TRW-2	Matrix: Water	% Moisture:
Lab Sample Id: 369409-022	Date Collected: Apr-15-10 10:40	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804067**

Date Prep: **Apr-23-10 18:54**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/23/10 21:48		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/23/10 21:48		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/23/10 21:48		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/23/10 21:48		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/23/10 21:48		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/23/10 21:48		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/23/10 21:48		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/23/10 21:48		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/23/10 21:48		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/23/10 21:48		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/23/10 21:48		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/23/10 21:48		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/23/10 21:48		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/23/10 21:48		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/23/10 21:48		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/23/10 21:48		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/23/10 21:48		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/23/10 21:48		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/23/10 21:48		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/23/10 21:48		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/23/10 21:48		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/23/10 21:48		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/23/10 21:48		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/23/10 21:48		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/23/10 21:48		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/23/10 21:48		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/23/10 21:48		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/23/10 21:48		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/23/10 21:48		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/23/10 21:48		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/23/10 21:48		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/23/10 21:48		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/23/10 21:48		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/23/10 21:48		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/23/10 21:48		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/23/10 21:48		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/23/10 21:48		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/23/10 21:48		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/23/10 21:48		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: **TRW-2**
Lab Sample Id: **369409-022**

Matrix: **Water**
Date Collected: **Apr-15-10 10:40**
Date Received: **Apr-16-10 09:00**

% Moisture:

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804067**

Date Prep: **Apr-23-10 18:54**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/23/10 21:48		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/23/10 21:48		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/23/10 21:48		1
Styrene	100-42-5	BRL	5.00		ug/L	04/23/10 21:48		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/23/10 21:48		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/23/10 21:48		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/23/10 21:48		1
Toluene	108-88-3	BRL	5.00		ug/L	04/23/10 21:48		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/23/10 21:48		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/23/10 21:48		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/23/10 21:48		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/23/10 21:48		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/23/10 21:48		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/23/10 21:48		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/23/10 21:48		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/23/10 21:48		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/23/10 21:48		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/23/10 21:48		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/23/10 21:48		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/23/10 21:48		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/23/10 21:48		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-20	Matrix: Water	% Moisture:
Lab Sample Id: 369409-023	Date Collected: Apr-15-10 10:50	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 18:56

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	497	25.0		ug/L	04/23/10 22:32	D	5
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/23/10 22:09		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/23/10 22:09		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/23/10 22:09		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/23/10 22:09		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/23/10 22:09		1
MTBE	1634-04-4	145	5.00		ug/L	04/23/10 22:09		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/23/10 22:09		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/23/10 22:09		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/23/10 22:09		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/23/10 22:09		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/23/10 22:09		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/23/10 22:09		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/23/10 22:09		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/23/10 22:09		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/23/10 22:09		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/23/10 22:09		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/23/10 22:09		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/23/10 22:09		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/23/10 22:09		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/23/10 22:09		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/23/10 22:09		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/23/10 22:09		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/23/10 22:09		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/23/10 22:09		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/23/10 22:09		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/23/10 22:09		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/23/10 22:09		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/23/10 22:09		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/23/10 22:09		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/23/10 22:09		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/23/10 22:09		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/23/10 22:09		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/23/10 22:09		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/23/10 22:09		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/23/10 22:09		1
Ethylbenzene	100-41-4	20.4	5.00		ug/L	04/23/10 22:09		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/23/10 22:09		1
isopropylbenzene	98-82-8	12.7	5.00		ug/L	04/23/10 22:09		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-20	Matrix: Water	% Moisture:
Lab Sample Id: 369409-023	Date Collected: Apr-15-10 10:50	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804067**

Date Prep: **Apr-23-10 18:56**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/23/10 22:09		1
Naphthalene	91-20-3	31.5	10.0		ug/L	04/23/10 22:09		1
n-Propylbenzene	103-65-1	14.4	5.00		ug/L	04/23/10 22:09		1
Styrene	100-42-5	BRL	5.00		ug/L	04/23/10 22:09		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/23/10 22:09		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/23/10 22:09		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/23/10 22:09		1
Toluene	108-88-3	43.2	5.00		ug/L	04/23/10 22:09		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/23/10 22:09		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/23/10 22:09		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/23/10 22:09		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/23/10 22:09		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/23/10 22:09		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/23/10 22:09		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/23/10 22:09		1
1,2,4-Trimethylbenzene	95-63-6	18.0	5.00		ug/L	04/23/10 22:09		1
1,3,5-Trimethylbenzene	108-67-8	11.4	5.00		ug/L	04/23/10 22:09		1
o-Xylene	95-47-6	28.4	5.00		ug/L	04/23/10 22:09		1
m,p-Xylenes	179601-23-1	56.5	10.0		ug/L	04/23/10 22:09		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/23/10 22:09		1
Total Xylenes	1330-20-7	84.9	5.00		ug/L	04/23/10 22:09		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-15	Matrix: Water	% Moisture:
Lab Sample Id: 369409-024	Date Collected: Apr-15-10 11:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 19:00

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	839	100		ug/L	04/28/10 15:08	D	20
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/23/10 22:54		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/23/10 22:54		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/23/10 22:54		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/23/10 22:54		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/23/10 22:54		1
MTBE	1634-04-4	38.8	5.00		ug/L	04/23/10 22:54		1
n-Butylbenzene	104-51-8	36.3	5.00		ug/L	04/23/10 22:54		1
Sec-Butylbenzene	135-98-8	23.4	5.00		ug/L	04/23/10 22:54		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/23/10 22:54		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/23/10 22:54		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/23/10 22:54		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/23/10 22:54		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/23/10 22:54		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/23/10 22:54		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/23/10 22:54		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/23/10 22:54		1
p-Cymene (p-Isopropyltoluene)	99-87-6	6.37	5.00		ug/L	04/23/10 22:54		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/23/10 22:54		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/23/10 22:54		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/23/10 22:54		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/23/10 22:54		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/23/10 22:54		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/23/10 22:54		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/23/10 22:54		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/23/10 22:54		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/23/10 22:54		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/23/10 22:54		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/23/10 22:54		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/23/10 22:54		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/23/10 22:54		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/23/10 22:54		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/23/10 22:54		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/23/10 22:54		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/23/10 22:54		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/23/10 22:54		1
Ethylbenzene	100-41-4	556	25.0		ug/L	04/26/10 16:56	D	5
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/23/10 22:54		1
isopropylbenzene	98-82-8	120	5.00		ug/L	04/23/10 22:54		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-15	Matrix: Water	% Moisture:
Lab Sample Id: 369409-024	Date Collected: Apr-15-10 11:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 19:00

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/23/10 22:54		1
Naphthalene	91-20-3	101	10.0		ug/L	04/23/10 22:54		1
n-Propylbenzene	103-65-1	173	25.0		ug/L	04/26/10 16:56	D	5
Styrene	100-42-5	BRL	5.00		ug/L	04/23/10 22:54		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/23/10 22:54		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/23/10 22:54		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/23/10 22:54		1
Toluene	108-88-3	4350	250		ug/L	04/28/10 15:30	D	50
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/23/10 22:54		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/23/10 22:54		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/23/10 22:54		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/23/10 22:54		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/23/10 22:54		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/23/10 22:54		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/23/10 22:54		1
1,2,4-Trimethylbenzene	95-63-6	532	100		ug/L	04/28/10 15:08	D	20
1,3,5-Trimethylbenzene	108-67-8	111	5.00		ug/L	04/23/10 22:54		1
o-Xylene	95-47-6	705	100		ug/L	04/28/10 15:08	D	20
m,p-Xylenes	179601-23-1	1730	200		ug/L	04/28/10 15:08	D	20
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/23/10 22:54		1
Total Xylenes	1330-20-7	3521	250		ug/L	04/28/10 15:08		20

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-16	Matrix: Water	% Moisture:
Lab Sample Id: 369409-025	Date Collected: Apr-15-10 11:10	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804058

Date Prep: Apr-26-10 12:02

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	37.6	5.00		ug/L	04/26/10 13:11		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/26/10 13:11		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/26/10 13:11		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/26/10 13:11		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/26/10 13:11		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/26/10 13:11		1
MTBE	1634-04-4	14.6	5.00		ug/L	04/26/10 13:11		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/26/10 13:11		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/26/10 13:11		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/26/10 13:11		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/26/10 13:11		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/26/10 13:11		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/26/10 13:11		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/26/10 13:11		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/26/10 13:11		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/26/10 13:11		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/26/10 13:11		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/26/10 13:11		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/26/10 13:11		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/26/10 13:11		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/26/10 13:11		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/26/10 13:11		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/26/10 13:11		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/26/10 13:11		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/26/10 13:11		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/26/10 13:11		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/26/10 13:11		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/26/10 13:11		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/26/10 13:11		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/26/10 13:11		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/26/10 13:11		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/26/10 13:11		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/26/10 13:11		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/26/10 13:11		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/26/10 13:11		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/26/10 13:11		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/26/10 13:11		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/26/10 13:11		1
isopropylbenzene	98-82-8	53.4	5.00		ug/L	04/26/10 13:11		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-16	Matrix: Water	% Moisture:
Lab Sample Id: 369409-025	Date Collected: Apr-15-10 11:10	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804058**

Date Prep: **Apr-26-10 12:02**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/26/10 13:11		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/26/10 13:11		1
n-Propylbenzene	103-65-1	51.3	5.00		ug/L	04/26/10 13:11		1
Styrene	100-42-5	BRL	5.00		ug/L	04/26/10 13:11		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/26/10 13:11		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/26/10 13:11		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/26/10 13:11		1
Toluene	108-88-3	BRL	5.00		ug/L	04/26/10 13:11		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/26/10 13:11		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/26/10 13:11		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/26/10 13:11		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/26/10 13:11		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/26/10 13:11		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/26/10 13:11		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/26/10 13:11		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/26/10 13:11		1
1,3,5-Trimethylbenzene	108-67-8	51.6	5.00		ug/L	04/26/10 13:11		1
o-Xylene	95-47-6	5.22	5.00		ug/L	04/26/10 13:11		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/26/10 13:11		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/26/10 13:11		1
Total Xylenes	1330-20-7	5.22	5.00		ug/L	04/26/10 13:11		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-17	Matrix: Water	% Moisture:
Lab Sample Id: 369409-026	Date Collected: Apr-15-10 11:20	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 19:04

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/23/10 23:38		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/23/10 23:38		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/23/10 23:38		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/23/10 23:38		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/23/10 23:38		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/23/10 23:38		1
MTBE	1634-04-4	5.10	5.00		ug/L	04/23/10 23:38		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/23/10 23:38		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/23/10 23:38		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/23/10 23:38		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/23/10 23:38		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/23/10 23:38		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/23/10 23:38		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/23/10 23:38		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/23/10 23:38		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/23/10 23:38		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/23/10 23:38		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/23/10 23:38		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/23/10 23:38		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/23/10 23:38		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/23/10 23:38		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/23/10 23:38		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/23/10 23:38		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/23/10 23:38		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/23/10 23:38		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/23/10 23:38		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/23/10 23:38		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/23/10 23:38		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/23/10 23:38		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/23/10 23:38		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/23/10 23:38		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/23/10 23:38		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/23/10 23:38		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/23/10 23:38		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/23/10 23:38		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/23/10 23:38		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/23/10 23:38		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/23/10 23:38		1
isopropylbenzene	98-82-8	18.0	5.00		ug/L	04/23/10 23:38		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-17
Lab Sample Id: 369409-026

Matrix: Water
Date Collected: Apr-15-10 11:20
Date Received: Apr-16-10 09:00

% Moisture:

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 19:04

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/23/10 23:38		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/23/10 23:38		1
n-Propylbenzene	103-65-1	12.9	5.00		ug/L	04/23/10 23:38		1
Styrene	100-42-5	BRL	5.00		ug/L	04/23/10 23:38		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/23/10 23:38		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/23/10 23:38		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/23/10 23:38		1
Toluene	108-88-3	BRL	5.00		ug/L	04/23/10 23:38		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/23/10 23:38		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/23/10 23:38		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/23/10 23:38		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/23/10 23:38		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/23/10 23:38		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/23/10 23:38		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/23/10 23:38		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/23/10 23:38		1
1,3,5-Trimethylbenzene	108-67-8	17.3	5.00		ug/L	04/23/10 23:38		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/23/10 23:38		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/23/10 23:38		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/23/10 23:38		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/23/10 23:38		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-19	Matrix: Water	% Moisture:
Lab Sample Id: 369409-027	Date Collected: Apr-15-10 11:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 19:06

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	11.2	5.00		ug/L	04/24/10 00:00		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/24/10 00:00		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/24/10 00:00		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/24/10 00:00		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/24/10 00:00		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/24/10 00:00		1
MTBE	1634-04-4	5.59	5.00		ug/L	04/24/10 00:00		1
n-Butylbenzene	104-51-8	5.17	5.00		ug/L	04/24/10 00:00		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/24/10 00:00		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/24/10 00:00		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/24/10 00:00		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/24/10 00:00		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/24/10 00:00		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/24/10 00:00		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/24/10 00:00		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/24/10 00:00		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/24/10 00:00		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/24/10 00:00		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/24/10 00:00		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/24/10 00:00		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/24/10 00:00		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/24/10 00:00		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/24/10 00:00		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/24/10 00:00		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/24/10 00:00		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/24/10 00:00		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/24/10 00:00		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/24/10 00:00		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/24/10 00:00		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/24/10 00:00		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/24/10 00:00		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/24/10 00:00		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/24/10 00:00		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/24/10 00:00		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/24/10 00:00		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/24/10 00:00		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/24/10 00:00		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/24/10 00:00		1
isopropylbenzene	98-82-8	51.8	5.00		ug/L	04/24/10 00:00		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-19	Matrix: Water	% Moisture:
Lab Sample Id: 369409-027	Date Collected: Apr-15-10 11:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804067**

Date Prep: **Apr-23-10 19:06**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/24/10 00:00		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/24/10 00:00		1
n-Propylbenzene	103-65-1	51.6	5.00		ug/L	04/24/10 00:00		1
Styrene	100-42-5	BRL	5.00		ug/L	04/24/10 00:00		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/24/10 00:00		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/24/10 00:00		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/24/10 00:00		1
Toluene	108-88-3	6.34	5.00		ug/L	04/24/10 00:00		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/24/10 00:00		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/24/10 00:00		1
1,1,1-Trichloroethane	71-55-6	BRL	*5.00		ug/L	04/24/10 00:00		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/24/10 00:00		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/24/10 00:00		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/24/10 00:00		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/24/10 00:00		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/24/10 00:00		1
1,3,5-Trimethylbenzene	108-67-8	50.9	5.00		ug/L	04/24/10 00:00		1
o-Xylene	95-47-6	23.9	5.00		ug/L	04/24/10 00:00		1
m,p-Xylenes	179601-23-1	21.0	10.0		ug/L	04/24/10 00:00		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/24/10 00:00		1
Total Xylenes	1330-20-7	44.9	5.00		ug/L	04/24/10 00:00		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-32	Matrix: Water	% Moisture:
Lab Sample Id: 369409-028	Date Collected: Apr-15-10 11:40	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 19:08

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/24/10 00:22		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/24/10 00:22		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/24/10 00:22		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/24/10 00:22		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/24/10 00:22		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/24/10 00:22		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/24/10 00:22		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/24/10 00:22		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/24/10 00:22		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/24/10 00:22		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/24/10 00:22		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/24/10 00:22		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/24/10 00:22		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/24/10 00:22		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/24/10 00:22		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/24/10 00:22		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/24/10 00:22		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/24/10 00:22		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/24/10 00:22		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/24/10 00:22		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/24/10 00:22		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/24/10 00:22		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/24/10 00:22		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/24/10 00:22		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/24/10 00:22		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/24/10 00:22		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/24/10 00:22		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/24/10 00:22		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/24/10 00:22		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/24/10 00:22		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/24/10 00:22		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/24/10 00:22		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/24/10 00:22		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/24/10 00:22		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/24/10 00:22		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/24/10 00:22		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/24/10 00:22		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/24/10 00:22		1
isopropylbenzene	98-82-8	6.79	5.00		ug/L	04/24/10 00:22		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-32	Matrix: Water	% Moisture:
Lab Sample Id: 369409-028	Date Collected: Apr-15-10 11:40	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: **CYE**
Seq Number: **804067**

Date Prep: **Apr-23-10 19:08**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/24/10 00:22		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/24/10 00:22		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/24/10 00:22		1
Styrene	100-42-5	BRL	5.00		ug/L	04/24/10 00:22		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/24/10 00:22		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/24/10 00:22		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/24/10 00:22		1
Toluene	108-88-3	BRL	5.00		ug/L	04/24/10 00:22		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/24/10 00:22		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/24/10 00:22		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/24/10 00:22		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/24/10 00:22		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/24/10 00:22		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/24/10 00:22		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/24/10 00:22		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/24/10 00:22		1
1,3,5-Trimethylbenzene	108-67-8	6.55	5.00		ug/L	04/24/10 00:22		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/24/10 00:22		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/24/10 00:22		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/24/10 00:22		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/24/10 00:22		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-33	Matrix: Water	% Moisture:
Lab Sample Id: 369409-029	Date Collected: Apr-15-10 11:50	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 19:10

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	223	25.0		ug/L	04/24/10 01:06	D	5
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/24/10 00:44		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/24/10 00:44		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/24/10 00:44		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/24/10 00:44		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/24/10 00:44		1
MTBE	1634-04-4	61.9	5.00		ug/L	04/24/10 00:44		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/24/10 00:44		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/24/10 00:44		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/24/10 00:44		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/24/10 00:44		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/24/10 00:44		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/24/10 00:44		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/24/10 00:44		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/24/10 00:44		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/24/10 00:44		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/24/10 00:44		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/24/10 00:44		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/24/10 00:44		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/24/10 00:44		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/24/10 00:44		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/24/10 00:44		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/24/10 00:44		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/24/10 00:44		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/24/10 00:44		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/24/10 00:44		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/24/10 00:44		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/24/10 00:44		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/24/10 00:44		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/24/10 00:44		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/24/10 00:44		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/24/10 00:44		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/24/10 00:44		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/24/10 00:44		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/24/10 00:44		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/24/10 00:44		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/24/10 00:44		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/24/10 00:44		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/24/10 00:44		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-33	Matrix: Water	% Moisture:
Lab Sample Id: 369409-029	Date Collected: Apr-15-10 11:50	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804067**

Date Prep: **Apr-23-10 19:10**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/24/10 00:44		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/24/10 00:44		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/24/10 00:44		1
Styrene	100-42-5	BRL	5.00		ug/L	04/24/10 00:44		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/24/10 00:44		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/24/10 00:44		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/24/10 00:44		1
Toluene	108-88-3	BRL	5.00		ug/L	04/24/10 00:44		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/24/10 00:44		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/24/10 00:44		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/24/10 00:44		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/24/10 00:44		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/24/10 00:44		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/24/10 00:44		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/24/10 00:44		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/24/10 00:44		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/24/10 00:44		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/24/10 00:44		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/24/10 00:44		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/24/10 00:44		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/24/10 00:44		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-39	Matrix: Water	% Moisture:
Lab Sample Id: 369409-030	Date Collected: Apr-15-10 12:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 19:14

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	65.9	5.00		ug/L	04/24/10 01:28		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/24/10 01:28		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/24/10 01:28		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/24/10 01:28		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/24/10 01:28		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/24/10 01:28		1
MTBE	1634-04-4	36.7	5.00		ug/L	04/24/10 01:28		1
n-Butylbenzene	104-51-8	8.38	5.00		ug/L	04/24/10 01:28		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/24/10 01:28		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/24/10 01:28		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/24/10 01:28		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/24/10 01:28		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/24/10 01:28		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/24/10 01:28		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/24/10 01:28		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/24/10 01:28		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/24/10 01:28		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/24/10 01:28		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/24/10 01:28		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/24/10 01:28		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/24/10 01:28		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/24/10 01:28		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/24/10 01:28		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/24/10 01:28		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/24/10 01:28		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/24/10 01:28		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/24/10 01:28		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/24/10 01:28		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/24/10 01:28		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/24/10 01:28		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/24/10 01:28		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/24/10 01:28		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/24/10 01:28		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/24/10 01:28		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/24/10 01:28		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/24/10 01:28		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/24/10 01:28		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/24/10 01:28		1
isopropylbenzene	98-82-8	13.3	5.00		ug/L	04/24/10 01:28		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-39	Matrix: Water	% Moisture:
Lab Sample Id: 369409-030	Date Collected: Apr-15-10 12:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804067

Date Prep: Apr-23-10 19:14

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/24/10 01:28		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/24/10 01:28		1
n-Propylbenzene	103-65-1	21.1	5.00		ug/L	04/24/10 01:28		1
Styrene	100-42-5	BRL	5.00		ug/L	04/24/10 01:28		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/24/10 01:28		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/24/10 01:28		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/24/10 01:28		1
Toluene	108-88-3	BRL	5.00		ug/L	04/24/10 01:28		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/24/10 01:28		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/24/10 01:28		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/24/10 01:28		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/24/10 01:28		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/24/10 01:28		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/24/10 01:28		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/24/10 01:28		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/24/10 01:28		1
1,3,5-Trimethylbenzene	108-67-8	12.7	5.00		ug/L	04/24/10 01:28		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/24/10 01:28		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/24/10 01:28		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/24/10 01:28		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/24/10 01:28		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-35	Matrix: Water	% Moisture:
Lab Sample Id: 369409-031	Date Collected: Apr-15-10 12:10	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804058**

Date Prep: **Apr-26-10 13:56**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	765	50.0		ug/L	04/26/10 16:30	D	10
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/26/10 16:08		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/26/10 16:08		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/26/10 16:08		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/26/10 16:08		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/26/10 16:08		1
MTBE	1634-04-4	97.4	5.00		ug/L	04/26/10 16:08		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/26/10 16:08		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/26/10 16:08		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/26/10 16:08		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/26/10 16:08		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/26/10 16:08		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/26/10 16:08		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/26/10 16:08		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/26/10 16:08		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/26/10 16:08		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/26/10 16:08		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/26/10 16:08		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/26/10 16:08		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/26/10 16:08		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/26/10 16:08		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/26/10 16:08		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/26/10 16:08		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/26/10 16:08		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/26/10 16:08		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/26/10 16:08		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/26/10 16:08		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/26/10 16:08		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/26/10 16:08		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/26/10 16:08		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/26/10 16:08		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/26/10 16:08		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/26/10 16:08		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/26/10 16:08		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/26/10 16:08		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/26/10 16:08		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/26/10 16:08		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/26/10 16:08		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/26/10 16:08		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-35	Matrix: Water	% Moisture:
Lab Sample Id: 369409-031	Date Collected: Apr-15-10 12:10	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804058

Date Prep: Apr-26-10 13:56

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/26/10 16:08		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/26/10 16:08		1
n-Propylbenzene	103-65-1	5.87	5.00		ug/L	04/26/10 16:08		1
Styrene	100-42-5	BRL	5.00		ug/L	04/26/10 16:08		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/26/10 16:08		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/26/10 16:08		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/26/10 16:08		1
Toluene	108-88-3	9.78	5.00		ug/L	04/26/10 16:08		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/26/10 16:08		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/26/10 16:08		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/26/10 16:08		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/26/10 16:08		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/26/10 16:08		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/26/10 16:08		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/26/10 16:08		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/26/10 16:08		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/26/10 16:08		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/26/10 16:08		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/26/10 16:08		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/26/10 16:08		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/26/10 16:08		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-38	Matrix: Water	% Moisture:
Lab Sample Id: 369409-032	Date Collected: Apr-15-10 12:20	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804058**

Date Prep: **Apr-26-10 13:48**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/26/10 14:39		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/26/10 14:39		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/26/10 14:39		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/26/10 14:39		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/26/10 14:39		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/26/10 14:39		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/26/10 14:39		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/26/10 14:39		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/26/10 14:39		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/26/10 14:39		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/26/10 14:39		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/26/10 14:39		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/26/10 14:39		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/26/10 14:39		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/26/10 14:39		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/26/10 14:39		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/26/10 14:39		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/26/10 14:39		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/26/10 14:39		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/26/10 14:39		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/26/10 14:39		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/26/10 14:39		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/26/10 14:39		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/26/10 14:39		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/26/10 14:39		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/26/10 14:39		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/26/10 14:39		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/26/10 14:39		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/26/10 14:39		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/26/10 14:39		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/26/10 14:39		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/26/10 14:39		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/26/10 14:39		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/26/10 14:39		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/26/10 14:39		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/26/10 14:39		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/26/10 14:39		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/26/10 14:39		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/26/10 14:39		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-38	Matrix: Water	% Moisture:
Lab Sample Id: 369409-032	Date Collected: Apr-15-10 12:20	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804058

Date Prep: Apr-26-10 13:48

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/26/10 14:39		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/26/10 14:39		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/26/10 14:39		1
Styrene	100-42-5	BRL	5.00		ug/L	04/26/10 14:39		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/26/10 14:39		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/26/10 14:39		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/26/10 14:39		1
Toluene	108-88-3	BRL	5.00		ug/L	04/26/10 14:39		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/26/10 14:39		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/26/10 14:39		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/26/10 14:39		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/26/10 14:39		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/26/10 14:39		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/26/10 14:39		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/26/10 14:39		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/26/10 14:39		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/26/10 14:39		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/26/10 14:39		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/26/10 14:39		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/26/10 14:39		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/26/10 14:39		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: MW-18	Matrix: Water	% Moisture:
Lab Sample Id: 369409-033	Date Collected: Apr-15-10 12:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804058

Date Prep: Apr-26-10 13:50

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	36.6	5.00		ug/L	04/26/10 15:02		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/26/10 15:02		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/26/10 15:02		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/26/10 15:02		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/26/10 15:02		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/26/10 15:02		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/26/10 15:02		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/26/10 15:02		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/26/10 15:02		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/26/10 15:02		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/26/10 15:02		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/26/10 15:02		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/26/10 15:02		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/26/10 15:02		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/26/10 15:02		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/26/10 15:02		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/26/10 15:02		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/26/10 15:02		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/26/10 15:02		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/26/10 15:02		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/26/10 15:02		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/26/10 15:02		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/26/10 15:02		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/26/10 15:02		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/26/10 15:02		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/26/10 15:02		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/26/10 15:02		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/26/10 15:02		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/26/10 15:02		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/26/10 15:02		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/26/10 15:02		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/26/10 15:02		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/26/10 15:02		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/26/10 15:02		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/26/10 15:02		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/26/10 15:02		1
Ethylbenzene	100-41-4	13.3	5.00		ug/L	04/26/10 15:02		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/26/10 15:02		1
isopropylbenzene	98-82-8	51.7	5.00		ug/L	04/26/10 15:02		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: MW-18	Matrix: Water	% Moisture:
Lab Sample Id: 369409-033	Date Collected: Apr-15-10 12:30	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: CYE	Date Prep: Apr-26-10 13:50	Tech: CYE
Seq Number: 804058		

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/26/10 15:02		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/26/10 15:02		1
n-Propylbenzene	103-65-1	35.9	5.00		ug/L	04/26/10 15:02		1
Styrene	100-42-5	BRL	5.00		ug/L	04/26/10 15:02		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/26/10 15:02		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/26/10 15:02		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/26/10 15:02		1
Toluene	108-88-3	5.08	5.00		ug/L	04/26/10 15:02		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/26/10 15:02		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/26/10 15:02		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/26/10 15:02		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/26/10 15:02		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/26/10 15:02		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/26/10 15:02		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/26/10 15:02		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/26/10 15:02		1
1,3,5-Trimethylbenzene	108-67-8	50.2	5.00		ug/L	04/26/10 15:02		1
o-Xylene	95-47-6	5.10	5.00		ug/L	04/26/10 15:02		1
m,p-Xylenes	179601-23-1	11.8	10.0		ug/L	04/26/10 15:02		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/26/10 15:02		1
Total Xylenes	1330-20-7	16.9	5.00		ug/L	04/26/10 15:02		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: Trip Blank	Matrix: Water	% Moisture:
Lab Sample Id: 369409-034	Date Collected: Apr-15-10 00:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804058

Date Prep: Apr-26-10 13:52

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/26/10 15:24		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/26/10 15:24		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/26/10 15:24		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/26/10 15:24		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/26/10 15:24		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/26/10 15:24		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/26/10 15:24		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/26/10 15:24		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/26/10 15:24		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/26/10 15:24		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/26/10 15:24		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/26/10 15:24		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/26/10 15:24		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/26/10 15:24		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/26/10 15:24		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/26/10 15:24		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/26/10 15:24		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/26/10 15:24		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/26/10 15:24		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/26/10 15:24		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/26/10 15:24		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/26/10 15:24		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/26/10 15:24		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/26/10 15:24		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/26/10 15:24		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/26/10 15:24		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/26/10 15:24		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/26/10 15:24		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/26/10 15:24		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/26/10 15:24		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/26/10 15:24		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/26/10 15:24		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/26/10 15:24		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/26/10 15:24		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/26/10 15:24		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/26/10 15:24		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/26/10 15:24		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/26/10 15:24		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/26/10 15:24		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: Trip Blank	Matrix: Water	% Moisture:
Lab Sample Id: 369409-034	Date Collected: Apr-15-10 00:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: VOAs by SW-846 8260

Prep Method: SW5030B

Analyst: CYE
Seq Number: 804058

Date Prep: Apr-26-10 13:52

Tech: CYE

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/26/10 15:24		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/26/10 15:24		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/26/10 15:24		1
Styrene	100-42-5	BRL	5.00		ug/L	04/26/10 15:24		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/26/10 15:24		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/26/10 15:24		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/26/10 15:24		1
Toluene	108-88-3	BRL	5.00		ug/L	04/26/10 15:24		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/26/10 15:24		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/26/10 15:24		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/26/10 15:24		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/26/10 15:24		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/26/10 15:24		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/26/10 15:24		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/26/10 15:24		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/26/10 15:24		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/26/10 15:24		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/26/10 15:24		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/26/10 15:24		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/26/10 15:24		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/26/10 15:24		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA

25 Paidge Avenue

Sample Id: Field Blank	Matrix: Water	% Moisture:
Lab Sample Id: 369409-035	Date Collected: Apr-15-10 07:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804058**

Date Prep: **Apr-26-10 13:54**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	BRL	5.00		ug/L	04/26/10 15:46		1
Bromobenzene	108-86-1	BRL	5.00		ug/L	04/26/10 15:46		1
Bromochloromethane	74-97-5	BRL	5.00		ug/L	04/26/10 15:46		1
Bromodichloromethane	75-27-4	BRL	5.00		ug/L	04/26/10 15:46		1
Bromoform	75-25-2	BRL	5.00		ug/L	04/26/10 15:46		1
Bromomethane	74-83-9	BRL	5.00		ug/L	04/26/10 15:46		1
MTBE	1634-04-4	BRL	5.00		ug/L	04/26/10 15:46		1
n-Butylbenzene	104-51-8	BRL	5.00		ug/L	04/26/10 15:46		1
Sec-Butylbenzene	135-98-8	BRL	5.00		ug/L	04/26/10 15:46		1
tert-Butylbenzene	98-06-6	BRL	5.00		ug/L	04/26/10 15:46		1
Carbon Tetrachloride	56-23-5	BRL	5.00		ug/L	04/26/10 15:46		1
Chlorobenzene	108-90-7	BRL	5.00		ug/L	04/26/10 15:46		1
Chloroethane	75-00-3	BRL	10.0		ug/L	04/26/10 15:46		1
Chloroform	67-66-3	BRL	5.00		ug/L	04/26/10 15:46		1
Chloromethane	74-87-3	BRL	10.0		ug/L	04/26/10 15:46		1
2-Chlorotoluene	95-49-8	BRL	5.00		ug/L	04/26/10 15:46		1
4-Chlorotoluene	106-43-4	BRL	5.00		ug/L	04/26/10 15:46		1
p-Cymene (p-Isopropyltoluene)	99-87-6	BRL	5.00		ug/L	04/26/10 15:46		1
Dibromochloromethane	124-48-1	BRL	5.00		ug/L	04/26/10 15:46		1
1,2-Dibromo-3-Chloropropane	96-12-8	BRL	5.00		ug/L	04/26/10 15:46		1
Dibromomethane	74-95-3	BRL	5.00		ug/L	04/26/10 15:46		1
1,2-Dichlorobenzene	95-50-1	BRL	5.00		ug/L	04/26/10 15:46		1
1,3-Dichlorobenzene	541-73-1	BRL	5.00		ug/L	04/26/10 15:46		1
1,4-Dichlorobenzene	106-46-7	BRL	5.00		ug/L	04/26/10 15:46		1
Dichlorodifluoromethane	75-71-8	BRL	5.00		ug/L	04/26/10 15:46		1
1,1-Dichloroethane	75-34-3	BRL	5.00		ug/L	04/26/10 15:46		1
1,2-Dichloroethane	107-06-2	BRL	5.00		ug/L	04/26/10 15:46		1
1,1-Dichloroethene	75-35-4	BRL	5.00		ug/L	04/26/10 15:46		1
cis-1,2-Dichloroethene	156-59-2	BRL	5.00		ug/L	04/26/10 15:46		1
trans-1,2-dichloroethene	156-60-5	BRL	5.00		ug/L	04/26/10 15:46		1
1,2-Dichloropropane	78-87-5	BRL	5.00		ug/L	04/26/10 15:46		1
1,3-Dichloropropane	142-28-9	BRL	5.00		ug/L	04/26/10 15:46		1
2,2-Dichloropropane	594-20-7	BRL	5.00		ug/L	04/26/10 15:46		1
1,1-Dichloropropene	563-58-6	BRL	5.00		ug/L	04/26/10 15:46		1
cis-1,3-Dichloropropene	10061-01-5	BRL	5.00		ug/L	04/26/10 15:46		1
trans-1,3-dichloropropene	10061-02-6	BRL	5.00		ug/L	04/26/10 15:46		1
Ethylbenzene	100-41-4	BRL	5.00		ug/L	04/26/10 15:46		1
Hexachlorobutadiene	87-68-3	BRL	5.00		ug/L	04/26/10 15:46		1
isopropylbenzene	98-82-8	BRL	5.00		ug/L	04/26/10 15:46		1

Project: Standard List of Methods



Certificate of Analytical Results 369409



Sovereign Consulting, Inc. (NY), Cranberry Twp, PA
25 Paidge Avenue

Sample Id: Field Blank	Matrix: Water	% Moisture:
Lab Sample Id: 369409-035	Date Collected: Apr-15-10 07:00	
	Date Received: Apr-16-10 09:00	

Analytical Method: **VOAs by SW-846 8260**

Prep Method: **SW5030B**

Analyst: **CYE**
Seq Number: **804058**

Date Prep: **Apr-26-10 13:54**

Tech: **CYE**

Parameter	Cas Number	Result	PQL	MDL	Units	Analysis Date	Flag	Dil
Methylene Chloride	75-09-2	BRL	5.00		ug/L	04/26/10 15:46		1
Naphthalene	91-20-3	BRL	10.0		ug/L	04/26/10 15:46		1
n-Propylbenzene	103-65-1	BRL	5.00		ug/L	04/26/10 15:46		1
Styrene	100-42-5	BRL	5.00		ug/L	04/26/10 15:46		1
1,1,1,2-Tetrachloroethane	630-20-6	BRL	5.00		ug/L	04/26/10 15:46		1
1,1,2,2-Tetrachloroethane	79-34-5	BRL	5.00		ug/L	04/26/10 15:46		1
Tetrachloroethylene	127-18-4	BRL	5.00		ug/L	04/26/10 15:46		1
Toluene	108-88-3	BRL	5.00		ug/L	04/26/10 15:46		1
1,2,3-Trichlorobenzene	87-61-6	BRL	5.00		ug/L	04/26/10 15:46		1
1,2,4-Trichlorobenzene	120-82-1	BRL	5.00		ug/L	04/26/10 15:46		1
1,1,1-Trichloroethane	71-55-6	BRL	5.00		ug/L	04/26/10 15:46		1
1,1,2-Trichloroethane	79-00-5	BRL	5.00		ug/L	04/26/10 15:46		1
Trichloroethene	79-01-6	BRL	5.00		ug/L	04/26/10 15:46		1
Trichlorofluoromethane	75-69-4	BRL	5.00		ug/L	04/26/10 15:46		1
1,2,3-Trichloropropane	96-18-4	BRL	5.00		ug/L	04/26/10 15:46		1
1,2,4-Trimethylbenzene	95-63-6	BRL	5.00		ug/L	04/26/10 15:46		1
1,3,5-Trimethylbenzene	108-67-8	BRL	5.00		ug/L	04/26/10 15:46		1
o-Xylene	95-47-6	BRL	5.00		ug/L	04/26/10 15:46		1
m,p-Xylenes	179601-23-1	BRL	10.0		ug/L	04/26/10 15:46		1
Vinyl Chloride	75-01-4	BRL	2.00		ug/L	04/26/10 15:46		1
Total Xylenes	1330-20-7	BRL	5.00		ug/L	04/26/10 15:46		1

Project: Standard List of Methods



XENCO
CHRONOLOGY OF HOLDING TIMES

Analytical Method : VOAs by SW-846 8260

Client : Sovereign Consulting, Inc. (N

Work Order #: 369409

Project ID: EQ24

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
MW-8	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P
Field Blank	Apr. 15, 2010	Apr. 16, 2010				Apr.26, 2010	14	11	P
MW-43	Apr. 15, 2010	Apr. 16, 2010				Apr.23, 2010	14	8	P
TRW-2	Apr. 15, 2010	Apr. 16, 2010				Apr.23, 2010	14	8	P
MW-21R	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P
MW-28	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P
MW-7R	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P
MW-9	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P
MW-42	Apr. 15, 2010	Apr. 16, 2010				Apr.23, 2010	14	8	P
MW-20	Apr. 15, 2010	Apr. 16, 2010				Apr.23, 2010	14	8	P
MW-15	Apr. 15, 2010	Apr. 16, 2010				Apr.23, 2010	14	8	P
MW-16	Apr. 15, 2010	Apr. 16, 2010				Apr.26, 2010	14	11	P
MW-18	Apr. 15, 2010	Apr. 16, 2010				Apr.26, 2010	14	11	P
MW-29	Apr. 15, 2010	Apr. 16, 2010				Apr.21, 2010	14	6	P
MW-27	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P
MW-6	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P
MW-30	Apr. 15, 2010	Apr. 16, 2010				Apr.23, 2010	14	8	P
MW-35	Apr. 15, 2010	Apr. 16, 2010				Apr.26, 2010	14	11	P
MW-1	Apr. 15, 2010	Apr. 16, 2010				Apr.20, 2010	14	5	P
MW-44	Apr. 15, 2010	Apr. 16, 2010				Apr.23, 2010	14	8	P
MW-3	Apr. 15, 2010	Apr. 16, 2010				Apr.21, 2010	14	6	P
MW-13	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P
MW-23	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P
MW-17	Apr. 15, 2010	Apr. 16, 2010				Apr.23, 2010	14	8	P
MW-19	Apr. 15, 2010	Apr. 16, 2010				Apr.24, 2010	14	9	P
MW-32	Apr. 15, 2010	Apr. 16, 2010				Apr.24, 2010	14	9	P
MW-33	Apr. 15, 2010	Apr. 16, 2010				Apr.24, 2010	14	9	P
MW-39	Apr. 15, 2010	Apr. 16, 2010				Apr.24, 2010	14	9	P
MW-5	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P
MW-24	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P



XENCO
CHRONOLOGY OF HOLDING TIMES

Analytical Method : VOAs by SW-846 8260

Sovereign Consulting, Inc. (N

Work Order #: 369409

Project ID: EQ24

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracted (Days)	Date Analyzed	Max Holding Time Analyzed (Days)		Q
Trip Blank	Apr. 15, 2010	Apr. 16, 2010				Apr.26, 2010	14	11	P
MW-22R	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P
MW-25	Apr. 15, 2010	Apr. 16, 2010				Apr.23, 2010	14	8	P
MW-38	Apr. 15, 2010	Apr. 16, 2010				Apr.26, 2010	14	11	P
MW-14	Apr. 15, 2010	Apr. 16, 2010				Apr.22, 2010	14	7	P

F = These samples were analyzed outside the recommended holding time.

P = Samples analyzed within the recommended holding time.



Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit
- * Outside XENCO's scope of NELAC Accreditation.

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Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 803446

Sample: 561312-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/20/10 19:44

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0511	0.0500	102	74-124	
Dibromofluoromethane	0.0497	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0469	0.0500	94	63-144	
Toluene-D8	0.0507	0.0500	101	80-117	

Lab Batch #: 803446

Sample: 561312-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/20/10 20:28

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0513	0.0500	103	74-124	
Dibromofluoromethane	0.0498	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0472	0.0500	94	63-144	
Toluene-D8	0.0478	0.0500	96	80-117	

Lab Batch #: 803446

Sample: 369409-001 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/20/10 20:50

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0501	0.0500	100	74-124	
Dibromofluoromethane	0.0492	0.0500	98	75-131	
1,2-Dichloroethane-D4	0.0497	0.0500	99	63-144	
Toluene-D8	0.0491	0.0500	98	80-117	

Lab Batch #: 803446

Sample: 369409-001 S / MS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/20/10 21:11

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0519	0.0500	104	74-124	
Dibromofluoromethane	0.0523	0.0500	105	75-131	
1,2-Dichloroethane-D4	0.0496	0.0500	99	63-144	
Toluene-D8	0.0491	0.0500	98	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 803446

Sample: 369409-001 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/20/10 21:32

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0504	0.0500	101	74-124	
Dibromofluoromethane	0.0535	0.0500	107	75-131	
1,2-Dichloroethane-D4	0.0491	0.0500	98	63-144	
Toluene-D8	0.0490	0.0500	98	80-117	

Lab Batch #: 803446

Sample: 369409-002 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/21/10 05:05

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0512	0.0500	102	74-124	
Dibromofluoromethane	0.0512	0.0500	102	75-131	
1,2-Dichloroethane-D4	0.0490	0.0500	98	63-144	
Toluene-D8	0.0483	0.0500	97	80-117	

Lab Batch #: 803645

Sample: 561445-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/21/10 10:43

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0514	0.0500	103	74-124	
Dibromofluoromethane	0.0482	0.0500	96	75-131	
1,2-Dichloroethane-D4	0.0458	0.0500	92	63-144	
Toluene-D8	0.0522	0.0500	104	80-117	

Lab Batch #: 803645

Sample: 561445-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/21/10 11:27

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0517	0.0500	103	74-124	
Dibromofluoromethane	0.0495	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0492	0.0500	98	63-144	
Toluene-D8	0.0483	0.0500	97	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 803645

Sample: 369409-003 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/21/10 13:58

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0533	0.0500	107	74-124	
Dibromofluoromethane	0.0487	0.0500	97	75-131	
1,2-Dichloroethane-D4	0.0457	0.0500	91	63-144	
Toluene-D8	0.0494	0.0500	99	80-117	

Lab Batch #: 803645

Sample: 369409-003 S / MS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/21/10 14:20

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0522	0.0500	104	74-124	
Dibromofluoromethane	0.0526	0.0500	105	75-131	
1,2-Dichloroethane-D4	0.0489	0.0500	98	63-144	
Toluene-D8	0.0502	0.0500	100	80-117	

Lab Batch #: 803645

Sample: 369409-003 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/21/10 14:42

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0515	0.0500	103	74-124	
Dibromofluoromethane	0.0529	0.0500	106	75-131	
1,2-Dichloroethane-D4	0.0481	0.0500	96	63-144	
Toluene-D8	0.0496	0.0500	99	80-117	

Lab Batch #: 803828

Sample: 561560-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 15:08

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0494	0.0500	99	74-124	
Dibromofluoromethane	0.0516	0.0500	103	75-131	
1,2-Dichloroethane-D4	0.0482	0.0500	96	63-144	
Toluene-D8	0.0503	0.0500	101	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 803828

Sample: 561560-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 15:52

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0545	0.0500	109	74-124	
Dibromofluoromethane	0.0503	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0510	0.0500	102	63-144	
Toluene-D8	0.0495	0.0500	99	80-117	

Lab Batch #: 803828

Sample: 369409-004 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 16:14

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0513	0.0500	103	74-124	
Dibromofluoromethane	0.0494	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0485	0.0500	97	63-144	
Toluene-D8	0.0504	0.0500	101	80-117	

Lab Batch #: 803828

Sample: 369409-004 S / MS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 16:36

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0495	0.0500	99	74-124	
Dibromofluoromethane	0.0523	0.0500	105	75-131	
1,2-Dichloroethane-D4	0.0533	0.0500	107	63-144	
Toluene-D8	0.0512	0.0500	102	80-117	

Lab Batch #: 803828

Sample: 369409-004 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 16:58

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0510	0.0500	102	74-124	
Dibromofluoromethane	0.0519	0.0500	104	75-131	
1,2-Dichloroethane-D4	0.0537	0.0500	107	63-144	
Toluene-D8	0.0492	0.0500	98	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 803828

Sample: 369409-005 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 19:33

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0501	0.0500	100	74-124	
Dibromofluoromethane	0.0513	0.0500	103	75-131	
1,2-Dichloroethane-D4	0.0519	0.0500	104	63-144	
Toluene-D8	0.0507	0.0500	101	80-117	

Lab Batch #: 803828

Sample: 369409-006 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 19:55

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0513	0.0500	103	74-124	
Dibromofluoromethane	0.0512	0.0500	102	75-131	
1,2-Dichloroethane-D4	0.0534	0.0500	107	63-144	
Toluene-D8	0.0495	0.0500	99	80-117	

Lab Batch #: 803828

Sample: 369409-007 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 20:17

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0510	0.0500	102	74-124	
Dibromofluoromethane	0.0474	0.0500	95	75-131	
1,2-Dichloroethane-D4	0.0539	0.0500	108	63-144	
Toluene-D8	0.0486	0.0500	97	80-117	

Lab Batch #: 803828

Sample: 369409-008 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 20:39

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0519	0.0500	104	74-124	
Dibromofluoromethane	0.0490	0.0500	98	75-131	
1,2-Dichloroethane-D4	0.0541	0.0500	108	63-144	
Toluene-D8	0.0528	0.0500	106	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 803828

Sample: 369409-009 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 21:01

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0512	0.0500	102	74-124	
Dibromofluoromethane	0.0528	0.0500	106	75-131	
1,2-Dichloroethane-D4	0.0492	0.0500	98	63-144	
Toluene-D8	0.0509	0.0500	102	80-117	

Lab Batch #: 803828

Sample: 369409-010 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 21:23

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0513	0.0500	103	74-124	
Dibromofluoromethane	0.0482	0.0500	96	75-131	
1,2-Dichloroethane-D4	0.0499	0.0500	100	63-144	
Toluene-D8	0.0502	0.0500	100	80-117	

Lab Batch #: 803828

Sample: 369409-011 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 21:45

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0547	0.0500	109	74-124	
Dibromofluoromethane	0.0504	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0485	0.0500	97	63-144	
Toluene-D8	0.0527	0.0500	105	80-117	

Lab Batch #: 803828

Sample: 369409-012 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 22:07

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0536	0.0500	107	74-124	
Dibromofluoromethane	0.0488	0.0500	98	75-131	
1,2-Dichloroethane-D4	0.0491	0.0500	98	63-144	
Toluene-D8	0.0524	0.0500	105	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 803828

Sample: 369409-013 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 22:51

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0537	0.0500	107	74-124	
Dibromofluoromethane	0.0504	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0491	0.0500	98	63-144	
Toluene-D8	0.0505	0.0500	101	80-117	

Lab Batch #: 803828

Sample: 369409-014 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 23:13

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0528	0.0500	106	74-124	
Dibromofluoromethane	0.0503	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0485	0.0500	97	63-144	
Toluene-D8	0.0508	0.0500	102	80-117	

Lab Batch #: 803828

Sample: 369409-015 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 23:35

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0530	0.0500	106	74-124	
Dibromofluoromethane	0.0507	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0498	0.0500	100	63-144	
Toluene-D8	0.0494	0.0500	99	80-117	

Lab Batch #: 803828

Sample: 369409-016 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/22/10 23:57

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0525	0.0500	105	74-124	
Dibromofluoromethane	0.0492	0.0500	98	75-131	
1,2-Dichloroethane-D4	0.0502	0.0500	100	63-144	
Toluene-D8	0.0512	0.0500	102	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Pajide Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 804058

Sample: 561728-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 11:40

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0514	0.0500	103	74-124	
Dibromofluoromethane	0.0497	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0495	0.0500	99	63-144	
Toluene-D8	0.0481	0.0500	96	80-117	

Lab Batch #: 804058

Sample: 561728-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 12:23

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0494	0.0500	99	74-124	
Dibromofluoromethane	0.0505	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0501	0.0500	100	63-144	
Toluene-D8	0.0477	0.0500	95	80-117	

Lab Batch #: 804058

Sample: 369409-025 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 13:11

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0498	0.0500	100	74-124	
Dibromofluoromethane	0.0485	0.0500	97	75-131	
1,2-Dichloroethane-D4	0.0479	0.0500	96	63-144	
Toluene-D8	0.0485	0.0500	97	80-117	

Lab Batch #: 804058

Sample: 369409-025 S / MS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 13:33

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0496	0.0500	99	74-124	
Dibromofluoromethane	0.0492	0.0500	98	75-131	
1,2-Dichloroethane-D4	0.0505	0.0500	101	63-144	
Toluene-D8	0.0479	0.0500	96	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 804058

Sample: 369409-025 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 13:55

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0500	0.0500	100	74-124	
Dibromofluoromethane	0.0513	0.0500	103	75-131	
1,2-Dichloroethane-D4	0.0497	0.0500	99	63-144	
Toluene-D8	0.0485	0.0500	97	80-117	

Lab Batch #: 804058

Sample: 369409-032 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 14:39

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0490	0.0500	98	74-124	
Dibromofluoromethane	0.0509	0.0500	102	75-131	
1,2-Dichloroethane-D4	0.0507	0.0500	101	63-144	
Toluene-D8	0.0483	0.0500	97	80-117	

Lab Batch #: 804058

Sample: 369409-033 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 15:02

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0516	0.0500	103	74-124	
Dibromofluoromethane	0.0501	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0503	0.0500	101	63-144	
Toluene-D8	0.0503	0.0500	101	80-117	

Lab Batch #: 804058

Sample: 369409-034 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 15:24

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0509	0.0500	102	74-124	
Dibromofluoromethane	0.0513	0.0500	103	75-131	
1,2-Dichloroethane-D4	0.0496	0.0500	99	63-144	
Toluene-D8	0.0404	0.0500	81	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 804058

Sample: 369409-035 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 15:46

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0489	0.0500	98	74-124	
Dibromofluoromethane	0.0499	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0501	0.0500	100	63-144	
Toluene-D8	0.0442	0.0500	88	80-117	

Lab Batch #: 804058

Sample: 369409-031 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 16:08

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0470	0.0500	94	74-124	
Dibromofluoromethane	0.0497	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0512	0.0500	102	63-144	
Toluene-D8	0.0502	0.0500	100	80-117	

Lab Batch #: 804058

Sample: 369409-031 / DL

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 16:30

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0496	0.0500	99	74-124	
Dibromofluoromethane	0.0531	0.0500	106	75-131	
1,2-Dichloroethane-D4	0.0499	0.0500	100	63-144	
Toluene-D8	0.0485	0.0500	97	80-117	

Lab Batch #: 804058

Sample: 369409-024 / DL

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/26/10 16:56

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0497	0.0500	99	74-124	
Dibromofluoromethane	0.0505	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0511	0.0500	102	63-144	
Toluene-D8	0.0501	0.0500	100	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 804067

Sample: 561731-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 16:17

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0504	0.0500	101	74-124	
Dibromofluoromethane	0.0504	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0491	0.0500	98	63-144	
Toluene-D8	0.0509	0.0500	102	80-117	

Lab Batch #: 804067

Sample: 561731-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 17:01

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0503	0.0500	101	74-124	
Dibromofluoromethane	0.0490	0.0500	98	75-131	
1,2-Dichloroethane-D4	0.0527	0.0500	105	63-144	
Toluene-D8	0.0495	0.0500	99	80-117	

Lab Batch #: 804067

Sample: 369409-017 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 17:23

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0489	0.0500	98	74-124	
Dibromofluoromethane	0.0496	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0504	0.0500	101	63-144	
Toluene-D8	0.0503	0.0500	101	80-117	

Lab Batch #: 804067

Sample: 369409-017 S / MS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 17:45

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0490	0.0500	98	74-124	
Dibromofluoromethane	0.0505	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0474	0.0500	95	63-144	
Toluene-D8	0.0490	0.0500	98	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Pajide Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 804067

Sample: 369409-017 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 18:07

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0483	0.0500	97	74-124	
Dibromofluoromethane	0.0505	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0512	0.0500	102	63-144	
Toluene-D8	0.0502	0.0500	100	80-117	

Lab Batch #: 804067

Sample: 369409-012 / DL

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 19:36

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0504	0.0500	101	74-124	
Dibromofluoromethane	0.0501	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0488	0.0500	98	63-144	
Toluene-D8	0.0491	0.0500	98	80-117	

Lab Batch #: 804067

Sample: 369409-012 / DL

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 19:58

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0510	0.0500	102	74-124	
Dibromofluoromethane	0.0503	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0496	0.0500	99	63-144	
Toluene-D8	0.0497	0.0500	99	80-117	

Lab Batch #: 804067

Sample: 369409-018 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 20:20

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0496	0.0500	99	74-124	
Dibromofluoromethane	0.0481	0.0500	96	75-131	
1,2-Dichloroethane-D4	0.0503	0.0500	101	63-144	
Toluene-D8	0.0498	0.0500	100	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Pajdige Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 804067

Sample: 369409-019 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 20:42

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0500	0.0500	100	74-124	
Dibromofluoromethane	0.0480	0.0500	96	75-131	
1,2-Dichloroethane-D4	0.0495	0.0500	99	63-144	
Toluene-D8	0.0491	0.0500	98	80-117	

Lab Batch #: 804067

Sample: 369409-020 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 21:04

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0490	0.0500	98	74-124	
Dibromofluoromethane	0.0484	0.0500	97	75-131	
1,2-Dichloroethane-D4	0.0509	0.0500	102	63-144	
Toluene-D8	0.0503	0.0500	101	80-117	

Lab Batch #: 804067

Sample: 369409-021 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 21:26

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0497	0.0500	99	74-124	
Dibromofluoromethane	0.0504	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0514	0.0500	103	63-144	
Toluene-D8	0.0498	0.0500	100	80-117	

Lab Batch #: 804067

Sample: 369409-022 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 21:48

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
4-Bromofluorobenzene	0.0497	0.0500	99	74-124	
Dibromofluoromethane	0.0490	0.0500	98	75-131	
1,2-Dichloroethane-D4	0.0510	0.0500	102	63-144	
Toluene-D8	0.0502	0.0500	100	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 804067

Sample: 369409-023 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 22:09

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0466	0.0500	93	74-124	
Dibromofluoromethane	0.0503	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0497	0.0500	99	63-144	
Toluene-D8	0.0513	0.0500	103	80-117	

Lab Batch #: 804067

Sample: 369409-023 / DL

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 22:32

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0490	0.0500	98	74-124	
Dibromofluoromethane	0.0516	0.0500	103	75-131	
1,2-Dichloroethane-D4	0.0545	0.0500	109	63-144	
Toluene-D8	0.0496	0.0500	99	80-117	

Lab Batch #: 804067

Sample: 369409-024 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 22:54

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0551	0.0500	110	74-124	
Dibromofluoromethane	0.0452	0.0500	90	75-131	
1,2-Dichloroethane-D4	0.0473	0.0500	95	63-144	
Toluene-D8	0.0564	0.0500	113	80-117	

Lab Batch #: 804067

Sample: 369409-026 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/23/10 23:38

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0500	0.0500	100	74-124	
Dibromofluoromethane	0.0497	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0490	0.0500	98	63-144	
Toluene-D8	0.0505	0.0500	101	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 804067

Sample: 369409-027 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/24/10 00:00

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0492	0.0500	98	74-124	
Dibromofluoromethane	0.0491	0.0500	98	75-131	
1,2-Dichloroethane-D4	0.0500	0.0500	100	63-144	
Toluene-D8	0.0495	0.0500	99	80-117	

Lab Batch #: 804067

Sample: 369409-028 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/24/10 00:22

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0498	0.0500	100	74-124	
Dibromofluoromethane	0.0494	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0508	0.0500	102	63-144	
Toluene-D8	0.0501	0.0500	100	80-117	

Lab Batch #: 804067

Sample: 369409-029 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/24/10 00:44

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0505	0.0500	101	74-124	
Dibromofluoromethane	0.0482	0.0500	96	75-131	
1,2-Dichloroethane-D4	0.0488	0.0500	98	63-144	
Toluene-D8	0.0504	0.0500	101	80-117	

Lab Batch #: 804067

Sample: 369409-029 / DL

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/24/10 01:06

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0492	0.0500	98	74-124	
Dibromofluoromethane	0.0502	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0531	0.0500	106	63-144	
Toluene-D8	0.0489	0.0500	98	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 804067

Sample: 369409-030 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/24/10 01:28

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0505	0.0500	101	74-124	
Dibromofluoromethane	0.0498	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0506	0.0500	101	63-144	
Toluene-D8	0.0528	0.0500	106	80-117	

Lab Batch #: 804536

Sample: 561998-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/28/10 11:02

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0506	0.0500	101	74-124	
Dibromofluoromethane	0.0522	0.0500	104	75-131	
1,2-Dichloroethane-D4	0.0514	0.0500	103	63-144	
Toluene-D8	0.0498	0.0500	100	80-117	

Lab Batch #: 804536

Sample: 561998-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/28/10 13:13

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0500	0.0500	100	74-124	
Dibromofluoromethane	0.0468	0.0500	94	75-131	
1,2-Dichloroethane-D4	0.0492	0.0500	98	63-144	
Toluene-D8	0.0507	0.0500	101	80-117	

Lab Batch #: 804536

Sample: 370094-006 S / MS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/28/10 14:24

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0495	0.0500	99	74-124	
Dibromofluoromethane	0.0506	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0525	0.0500	105	63-144	
Toluene-D8	0.0497	0.0500	99	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Form 2 - Surrogate Recoveries

Project Name: 25 Paidge Avenue

Work Orders : 369409,

Project ID: EQ24

Lab Batch #: 804536

Sample: 370094-006 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/28/10 14:46

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0513	0.0500	103	74-124	
Dibromofluoromethane	0.0501	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0485	0.0500	97	63-144	
Toluene-D8	0.0510	0.0500	102	80-117	

Lab Batch #: 804536

Sample: 369409-024 / DL

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/28/10 15:08

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0495	0.0500	99	74-124	
Dibromofluoromethane	0.0519	0.0500	104	75-131	
1,2-Dichloroethane-D4	0.0525	0.0500	105	63-144	
Toluene-D8	0.0503	0.0500	101	80-117	

Lab Batch #: 804536

Sample: 369409-024 / DL

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 04/28/10 15:30

SURROGATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0484	0.0500	97	74-124	
Dibromofluoromethane	0.0508	0.0500	102	75-131	
1,2-Dichloroethane-D4	0.0515	0.0500	103	63-144	
Toluene-D8	0.0509	0.0500	102	80-117	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

All results are based on MDL and validated for QC purposes.



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 803446

Sample: 561312-1-BKS

Matrix: Water

Date Analyzed: 04/20/2010

Date Prepared: 04/20/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK/BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Benzene	<5.00	50.0	43.3	87	66-142	
Bromobenzene	<5.00	50.0	46.7	93	75-125	
Bromochloromethane	<5.00	50.0	42.9	86	73-125	
Bromodichloromethane	<5.00	50.0	50.3	101	75-125	
Bromoform	<5.00	50.0	44.7	89	75-125	
Bromomethane	<5.00	50.0	64.1	128	70-130	
MTBE	<5.00	50.0	48.3	97	65-135	
n-Butylbenzene	<5.00	50.0	49.8	100	75-125	
Sec-Butylbenzene	<5.00	50.0	50.3	101	75-125	
tert-Butylbenzene	<5.00	50.0	50.6	101	75-125	
Carbon Tetrachloride	<5.00	50.0	54.0	108	62-125	
Chlorobenzene	<5.00	50.0	47.1	94	60-133	
Chloroethane	<10.0	50.0	51.2	102	70-130	
Chloroform	<5.00	50.0	49.7	99	74-125	
Chloromethane	<10.0	50.0	46.0	92	70-130	
2-Chlorotoluene	<5.00	50.0	46.9	94	73-125	
4-Chlorotoluene	<5.00	50.0	50.3	101	74-125	
p-Cymene (p-Isopropyltoluene)	<5.00	50.0	51.3	103	75-125	
Dibromochloromethane	<5.00	50.0	47.7	95	73-125	
1,2-Dibromo-3-Chloropropane	<5.00	50.0	46.4	93	59-125	
Dibromomethane	<5.00	50.0	44.6	89	69-127	
1,2-Dichlorobenzene	<5.00	50.0	46.1	92	75-125	
1,3-Dichlorobenzene	<5.00	50.0	48.1	96	75-125	
1,4-Dichlorobenzene	<5.00	50.0	46.4	93	75-125	
Dichlorodifluoromethane	<5.00	50.0	56.7	113	70-130	
1,1-Dichloroethane	<5.00	50.0	49.9	100	72-125	
1,2-Dichloroethane	<5.00	50.0	53.2	106	68-127	
1,1-Dichloroethene	<5.00	50.0	43.4	87	59-172	
cis-1,2-Dichloroethene	<5.00	50.0	42.6	85	75-125	
trans-1,2-dichloroethene	<5.00	50.0	44.1	88	75-125	
1,2-Dichloropropane	<5.00	50.0	44.9	90	74-125	
1,3-Dichloropropane	<5.00	50.0	44.4	89	75-125	
2,2-Dichloropropane	<5.00	50.0	54.8	110	75-125	

Blank Spike Recovery [D] = $100 \times [C]/[B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 803446

Sample: 561312-1-BKS

Matrix: Water

Date Analyzed: 04/20/2010

Date Prepared: 04/20/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK/BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
1,1-Dichloropropene	<5.00	50.0	44.4	89	75-125	
cis-1,3-Dichloropropene	<5.00	50.0	48.8	98	74-125	
trans-1,3-dichloropropene	<5.00	50.0	51.5	103	66-125	
Ethylbenzene	<5.00	50.0	47.6	95	75-125	
Hexachlorobutadiene	<5.00	50.0	48.7	97	75-125	
isopropylbenzene	<5.00	50.0	47.5	95	75-125	
Methylene Chloride	<5.00	50.0	40.7	81	75-125	
Naphthalene	<10.0	50.0	45.2	90	75-125	
n-Propylbenzene	<5.00	50.0	49.7	99	75-125	
Styrene	<5.00	50.0	46.1	92	75-125	
1,1,1,2-Tetrachloroethane	<5.00	50.0	49.8	100	72-125	
1,1,2,2-Tetrachloroethane	<5.00	50.0	44.2	88	74-125	
Tetrachloroethylene	<5.00	50.0	46.6	93	71-125	
Toluene	<5.00	50.0	44.4	89	59-139	
1,2,3-Trichlorobenzene	<5.00	50.0	44.4	89	75-137	
1,2,4-Trichlorobenzene	<5.00	50.0	45.7	91	75-135	
1,1,1-Trichloroethane	<5.00	50.0	52.5	105	75-125	
1,1,2-Trichloroethane	<5.00	50.0	44.9	90	75-127	
Trichloroethene	<5.00	50.0	47.7	95	62-137	
Trichlorofluoromethane	<5.00	50.0	62.9	126	67-125	H
1,2,3-Trichloropropane	<5.00	50.0	48.2	96	75-125	
1,2,4-Trimethylbenzene	<5.00	50.0	51.0	102	75-125	
1,3,5-Trimethylbenzene	<5.00	50.0	51.3	103	70-125	
o-Xylene	<5.00	50.0	45.8	92	75-125	
m,p-Xylenes	<10.0	100	92.2	92	75-125	
Vinyl Chloride	<2.00	50.0	53.3	107	75-125	

Blank Spike Recovery [D] = $100 * [C] / [B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 803645

Sample: 561445-1-BKS

Matrix: Water

Date Analyzed: 04/21/2010

Date Prepared: 04/21/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK/BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Benzene	<5.00	50.0	43.5	87	66-142	
Bromobenzene	<5.00	50.0	45.7	91	75-125	
Bromochloromethane	<5.00	50.0	39.8	80	73-125	
Bromodichloromethane	<5.00	50.0	48.3	97	75-125	
Bromoform	<5.00	50.0	44.5	89	75-125	
Bromomethane	<5.00	50.0	57.2	114	70-130	
MTBE	<5.00	50.0	42.6	85	65-135	
n-Butylbenzene	<5.00	50.0	50.9	102	75-125	
Sec-Butylbenzene	<5.00	50.0	50.7	101	75-125	
tert-Butylbenzene	<5.00	50.0	51.6	103	75-125	
Carbon Tetrachloride	<5.00	50.0	53.6	107	62-125	
Chlorobenzene	<5.00	50.0	44.8	90	60-133	
Chloroethane	<10.0	50.0	44.6	89	70-130	
Chloroform	<5.00	50.0	47.5	95	74-125	
Chloromethane	<10.0	50.0	41.0	82	70-130	
2-Chlorotoluene	<5.00	50.0	46.5	93	73-125	
4-Chlorotoluene	<5.00	50.0	51.2	102	74-125	
p-Cymene (p-Isopropyltoluene)	<5.00	50.0	52.5	105	75-125	
Dibromochloromethane	<5.00	50.0	47.4	95	73-125	
1,2-Dibromo-3-Chloropropane	<5.00	50.0	54.0	108	59-125	
Dibromomethane	<5.00	50.0	44.1	88	69-127	
1,2-Dichlorobenzene	<5.00	50.0	44.8	90	75-125	
1,3-Dichlorobenzene	<5.00	50.0	46.7	93	75-125	
1,4-Dichlorobenzene	<5.00	50.0	45.8	92	75-125	
Dichlorodifluoromethane	<5.00	50.0	50.3	101	70-130	
1,1-Dichloroethane	<5.00	50.0	45.9	92	72-125	
1,2-Dichloroethane	<5.00	50.0	55.7	111	68-127	
1,1-Dichloroethene	<5.00	50.0	40.1	80	59-172	
cis-1,2-Dichloroethene	<5.00	50.0	39.4	79	75-125	
trans-1,2-dichloroethene	<5.00	50.0	40.0	80	75-125	
1,2-Dichloropropane	<5.00	50.0	42.9	86	74-125	
1,3-Dichloropropane	<5.00	50.0	44.4	89	75-125	
2,2-Dichloropropane	<5.00	50.0	54.2	108	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 803645

Sample: 561445-1-BKS

Matrix: Water

Date Analyzed: 04/21/2010

Date Prepared: 04/21/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK/BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
1,1-Dichloropropene	<5.00	50.0	44.7	89	75-125	
cis-1,3-Dichloropropene	<5.00	50.0	45.4	91	74-125	
trans-1,3-dichloropropene	<5.00	50.0	52.4	105	66-125	
Ethylbenzene	<5.00	50.0	46.9	94	75-125	
Hexachlorobutadiene	<5.00	50.0	50.7	101	75-125	
isopropylbenzene	<5.00	50.0	47.2	94	75-125	
Methylene Chloride	<5.00	50.0	35.6	71	75-125	L
Naphthalene	<10.0	50.0	45.0	90	75-125	
n-Propylbenzene	<5.00	50.0	47.7	95	75-125	
Styrene	<5.00	50.0	43.8	88	75-125	
1,1,1,2-Tetrachloroethane	<5.00	50.0	47.8	96	72-125	
1,1,2,2-Tetrachloroethane	<5.00	50.0	43.5	87	74-125	
Tetrachloroethylene	<5.00	50.0	47.1	94	71-125	
Toluene	<5.00	50.0	44.5	89	59-139	
1,2,3-Trichlorobenzene	<5.00	50.0	42.8	86	75-137	
1,2,4-Trichlorobenzene	<5.00	50.0	43.6	87	75-135	
1,1,1-Trichloroethane	<5.00	50.0	52.4	105	75-125	
1,1,2-Trichloroethane	<5.00	50.0	43.7	87	75-127	
Trichloroethene	<5.00	50.0	46.5	93	62-137	
Trichlorofluoromethane	<5.00	50.0	54.8	110	67-125	
1,2,3-Trichloropropane	<5.00	50.0	50.3	101	75-125	
1,2,4-Trimethylbenzene	<5.00	50.0	50.9	102	75-125	
1,3,5-Trimethylbenzene	<5.00	50.0	51.4	103	70-125	
o-Xylene	<5.00	50.0	44.0	88	75-125	
m,p-Xylenes	<10.0	100	87.8	88	75-125	
Vinyl Chloride	<2.00	50.0	43.8	88	75-125	

Blank Spike Recovery [D] = $100 \times [C]/[B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 803828

Sample: 561560-1-BKS

Matrix: Water

Date Analyzed: 04/22/2010

Date Prepared: 04/22/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK /BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Benzene	<5.00	50.0	51.9	104	66-142	
Bromobenzene	<5.00	50.0	47.8	96	75-125	
Bromochloromethane	<5.00	50.0	52.2	104	73-125	
Bromodichloromethane	<5.00	50.0	49.8	100	75-125	
Bromoform	<5.00	50.0	50.7	101	75-125	
Bromomethane	<5.00	50.0	53.3	107	70-130	
MTBE	<5.00	50.0	58.8	118	65-135	
n-Butylbenzene	<5.00	50.0	52.8	106	75-125	
Sec-Butylbenzene	<5.00	50.0	53.6	107	75-125	
tert-Butylbenzene	<5.00	50.0	52.8	106	75-125	
Carbon Tetrachloride	<5.00	50.0	54.1	108	62-125	
Chlorobenzene	<5.00	50.0	50.9	102	60-133	
Chloroethane	<10.0	50.0	54.0	108	70-130	
Chloroform	<5.00	50.0	51.3	103	74-125	
Chloromethane	<10.0	50.0	61.0	122	70-130	
2-Chlorotoluene	<5.00	50.0	51.0	102	73-125	
4-Chlorotoluene	<5.00	50.0	51.3	103	74-125	
p-Cymene (p-Isopropyltoluene)	<5.00	50.0	53.7	107	75-125	
Dibromochloromethane	<5.00	50.0	51.3	103	73-125	
1,2-Dibromo-3-Chloropropane	<5.00	50.0	57.0	114	59-125	
Dibromomethane	<5.00	50.0	49.4	99	69-127	
1,2-Dichlorobenzene	<5.00	50.0	50.0	100	75-125	
1,3-Dichlorobenzene	<5.00	50.0	50.2	100	75-125	
1,4-Dichlorobenzene	<5.00	50.0	49.9	100	75-125	
Dichlorodifluoromethane	<5.00	50.0	59.4	119	70-130	
1,1-Dichloroethane	<5.00	50.0	53.3	107	72-125	
1,2-Dichloroethane	<5.00	50.0	51.4	103	68-127	
1,1-Dichloroethene	<5.00	50.0	52.3	105	59-172	
cis-1,2-Dichloroethene	<5.00	50.0	52.9	106	75-125	
trans-1,2-dichloroethene	<5.00	50.0	54.8	110	75-125	
1,2-Dichloropropane	<5.00	50.0	50.6	101	74-125	
1,3-Dichloropropane	<5.00	50.0	48.2	96	75-125	
2,2-Dichloropropane	<5.00	50.0	58.2	116	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 803828

Sample: 561560-1-BKS

Matrix: Water

Date Analyzed: 04/22/2010

Date Prepared: 04/22/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK /BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
1,1-Dichloropropene	<5.00	50.0	49.7	99	75-125	
cis-1,3-Dichloropropene	<5.00	50.0	50.7	101	74-125	
Ethylbenzene	<5.00	50.0	52.1	104	75-125	
Hexachlorobutadiene	<5.00	50.0	50.3	101	75-125	
isopropylbenzene	<5.00	50.0	53.8	108	75-125	
Methylene Chloride	<5.00	50.0	52.0	104	75-125	
Naphthalene	<10.0	50.0	56.2	112	75-125	
n-Propylbenzene	<5.00	50.0	52.4	105	75-125	
Styrene	<5.00	50.0	51.8	104	75-125	
1,1,1,2-Tetrachloroethane	<5.00	50.0	52.0	104	72-125	
Tetrachloroethylene	<5.00	50.0	49.5	99	71-125	
Toluene	<5.00	50.0	50.1	100	59-139	
1,2,3-Trichlorobenzene	<5.00	50.0	56.0	112	75-137	
1,2,4-Trichlorobenzene	<5.00	50.0	52.6	105	75-135	
1,1,1-Trichloroethane	<5.00	50.0	53.0	106	75-125	
1,1,2-Trichloroethane	<5.00	50.0	50.7	101	75-127	
Trichloroethene	<5.00	50.0	50.9	102	62-137	
Trichlorofluoromethane	<5.00	50.0	59.5	119	67-125	
1,2,3-Trichloropropane	<5.00	50.0	54.2	108	75-125	
1,2,4-Trimethylbenzene	<5.00	50.0	52.6	105	75-125	
1,3,5-Trimethylbenzene	<5.00	50.0	52.3	105	70-125	
o-Xylene	<5.00	50.0	53.4	107	75-125	
m,p-Xylenes	<10.0	100	104	104	75-125	
Vinyl Chloride	<2.00	50.0	52.7	105	75-125	

Blank Spike Recovery [D] = $100 \times [C]/[B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 804058

Sample: 561728-1-BKS

Matrix: Water

Date Analyzed: 04/26/2010

Date Prepared: 04/26/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK /BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Benzene	<5.00	50.0	46.2	92	66-142	
Bromobenzene	<5.00	50.0	51.6	103	75-125	
Bromochloromethane	<5.00	50.0	48.3	97	73-125	
Bromodichloromethane	<5.00	50.0	56.6	113	75-125	
Bromoform	<5.00	50.0	58.7	117	75-125	
Bromomethane	<5.00	50.0	38.5	77	70-130	
MTBE	<5.00	50.0	49.1	98	65-135	
n-Butylbenzene	<5.00	50.0	50.0	100	75-125	
Sec-Butylbenzene	<5.00	50.0	53.9	108	75-125	
tert-Butylbenzene	<5.00	50.0	54.7	109	75-125	
Carbon Tetrachloride	<5.00	50.0	48.9	98	62-125	
Chlorobenzene	<5.00	50.0	52.6	105	60-133	
Chloroethane	<10.0	50.0	40.4	81	70-130	
Chloroform	<5.00	50.0	49.4	99	74-125	
Chloromethane	<10.0	50.0	38.9	78	70-130	
2-Chlorotoluene	<5.00	50.0	51.5	103	73-125	
4-Chlorotoluene	<5.00	50.0	50.7	101	74-125	
p-Cymene (p-Isopropyltoluene)	<5.00	50.0	52.6	105	75-125	
Dibromochloromethane	<5.00	50.0	60.6	121	73-125	
1,2-Dibromo-3-Chloropropane	<5.00	50.0	51.4	103	59-125	
Dibromomethane	<5.00	50.0	48.5	97	69-127	
1,2-Dichlorobenzene	<5.00	50.0	52.1	104	75-125	
1,3-Dichlorobenzene	<5.00	50.0	52.4	105	75-125	
1,4-Dichlorobenzene	<5.00	50.0	51.2	102	75-125	
Dichlorodifluoromethane	<5.00	50.0	46.2	92	70-130	
1,1-Dichloroethane	<5.00	50.0	49.9	100	72-125	
1,2-Dichloroethane	<5.00	50.0	48.5	97	68-127	
1,1-Dichloroethene	<5.00	50.0	42.7	85	59-172	
cis-1,2-Dichloroethene	<5.00	50.0	46.0	92	75-125	
trans-1,2-dichloroethene	<5.00	50.0	42.2	84	75-125	
1,2-Dichloropropane	<5.00	50.0	51.4	103	74-125	
1,3-Dichloropropane	<5.00	50.0	50.2	100	75-125	
2,2-Dichloropropane	<5.00	50.0	49.5	99	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 804058

Sample: 561728-1-BKS

Matrix: Water

Date Analyzed: 04/26/2010

Date Prepared: 04/26/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK/BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
1,1-Dichloropropene	<5.00	50.0	40.8	82	75-125	
cis-1,3-Dichloropropene	<5.00	50.0	57.1	114	74-125	
trans-1,3-dichloropropene	<5.00	50.0	55.9	112	66-125	
Ethylbenzene	<5.00	50.0	49.1	98	75-125	
Hexachlorobutadiene	<5.00	50.0	51.6	103	75-125	
isopropylbenzene	<5.00	50.0	49.7	99	75-125	
Methylene Chloride	<5.00	50.0	44.8	90	75-125	
Naphthalene	<10.0	50.0	50.3	101	75-125	
n-Propylbenzene	<5.00	50.0	51.5	103	75-125	
Styrene	<5.00	50.0	51.0	102	75-125	
1,1,1,2-Tetrachloroethane	<5.00	50.0	52.3	105	72-125	
1,1,2,2-Tetrachloroethane	<5.00	50.0	55.1	110	74-125	
Tetrachloroethylene	<5.00	50.0	47.5	95	71-125	
Toluene	<5.00	50.0	48.9	98	59-139	
1,2,3-Trichlorobenzene	<5.00	50.0	52.1	104	75-137	
1,2,4-Trichlorobenzene	<5.00	50.0	50.9	102	75-135	
1,1,1-Trichloroethane	<5.00	50.0	45.2	90	75-125	
1,1,2-Trichloroethane	<5.00	50.0	53.4	107	75-127	
Trichloroethene	<5.00	50.0	47.0	94	62-137	
Trichlorofluoromethane	<5.00	50.0	50.4	101	67-125	
1,2,3-Trichloropropane	<5.00	50.0	54.9	110	75-125	
1,2,4-Trimethylbenzene	<5.00	50.0	51.6	103	75-125	
1,3,5-Trimethylbenzene	<5.00	50.0	51.3	103	70-125	
o-Xylene	<5.00	50.0	50.4	101	75-125	
m,p-Xylenes	<10.0	100	99.9	100	75-125	
Vinyl Chloride	<2.00	50.0	39.1	78	75-125	

Blank Spike Recovery [D] = $100 * [C] / [B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 804067

Sample: 561731-1-BKS

Matrix: Water

Date Analyzed: 04/23/2010

Date Prepared: 04/23/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK/BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Benzene	<5.00	50.0	48.7	97	66-142	
Bromobenzene	<5.00	50.0	53.1	106	75-125	
Bromochloromethane	<5.00	50.0	51.3	103	73-125	
Bromodichloromethane	<5.00	50.0	55.1	110	75-125	
Bromoform	<5.00	50.0	55.9	112	75-125	
Bromomethane	<5.00	50.0	46.6	93	70-130	
MTBE	<5.00	50.0	54.5	109	65-135	
n-Butylbenzene	<5.00	50.0	52.1	104	75-125	
Sec-Butylbenzene	<5.00	50.0	54.4	109	75-125	
tert-Butylbenzene	<5.00	50.0	55.0	110	75-125	
Carbon Tetrachloride	<5.00	50.0	50.9	102	62-125	
Chlorobenzene	<5.00	50.0	53.7	107	60-133	
Chloroethane	<10.0	50.0	46.8	94	70-130	
Chloroform	<5.00	50.0	50.6	101	74-125	
Chloromethane	<10.0	50.0	44.3	89	70-130	
2-Chlorotoluene	<5.00	50.0	51.8	104	73-125	
4-Chlorotoluene	<5.00	50.0	52.9	106	74-125	
p-Cymene (p-Isopropyltoluene)	<5.00	50.0	53.6	107	75-125	
Dibromochloromethane	<5.00	50.0	56.6	113	73-125	
1,2-Dibromo-3-Chloropropane	<5.00	50.0	52.3	105	59-125	
Dibromomethane	<5.00	50.0	50.0	100	69-127	
1,2-Dichlorobenzene	<5.00	50.0	52.3	105	75-125	
1,3-Dichlorobenzene	<5.00	50.0	53.5	107	75-125	
1,4-Dichlorobenzene	<5.00	50.0	52.1	104	75-125	
Dichlorodifluoromethane	<5.00	50.0	50.1	100	70-130	
1,1-Dichloroethane	<5.00	50.0	53.3	107	72-125	
1,2-Dichloroethane	<5.00	50.0	48.6	97	68-127	
1,1-Dichloroethene	<5.00	50.0	49.3	99	59-172	
cis-1,2-Dichloroethene	<5.00	50.0	48.9	98	75-125	
trans-1,2-dichloroethene	<5.00	50.0	49.3	99	75-125	
1,2-Dichloropropane	<5.00	50.0	51.5	103	74-125	
1,3-Dichloropropane	<5.00	50.0	51.7	103	75-125	
2,2-Dichloropropane	<5.00	50.0	54.3	109	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 804067

Sample: 561731-1-BKS

Matrix: Water

Date Analyzed: 04/23/2010

Date Prepared: 04/23/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK /BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
1,1-Dichloropropene	<5.00	50.0	43.8	88	75-125	
cis-1,3-Dichloropropene	<5.00	50.0	53.9	108	74-125	
trans-1,3-dichloropropene	<5.00	50.0	54.6	109	66-125	
Ethylbenzene	<5.00	50.0	50.8	102	75-125	
Hexachlorobutadiene	<5.00	50.0	54.9	110	75-125	
isopropylbenzene	<5.00	50.0	52.0	104	75-125	
Methylene Chloride	<5.00	50.0	49.9	100	75-125	
Naphthalene	<10.0	50.0	55.8	112	75-125	
n-Propylbenzene	<5.00	50.0	52.8	106	75-125	
Styrene	<5.00	50.0	52.1	104	75-125	
1,1,1,2-Tetrachloroethane	<5.00	50.0	52.1	104	72-125	
1,1,2,2-Tetrachloroethane	<5.00	50.0	54.7	109	74-125	
Tetrachloroethylene	<5.00	50.0	51.6	103	71-125	
Toluene	<5.00	50.0	49.5	99	59-139	
1,2,3-Trichlorobenzene	<5.00	50.0	56.4	113	75-137	
1,2,4-Trichlorobenzene	<5.00	50.0	55.4	111	75-135	
1,1,1-Trichloroethane	<5.00	50.0	47.9	96	75-125	
1,1,2-Trichloroethane	<5.00	50.0	53.3	107	75-127	
Trichloroethene	<5.00	50.0	49.4	99	62-137	
Trichlorofluoromethane	<5.00	50.0	56.0	112	67-125	
1,2,3-Trichloropropane	<5.00	50.0	55.6	111	75-125	
1,2,4-Trimethylbenzene	<5.00	50.0	52.3	105	75-125	
1,3,5-Trimethylbenzene	<5.00	50.0	52.0	104	70-125	
o-Xylene	<5.00	50.0	52.7	105	75-125	
m,p-Xylenes	<10.0	100	104	104	75-125	
Vinyl Chloride	<2.00	50.0	44.6	89	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 804536

Sample: 561998-1-BKS

Matrix: Water

Date Analyzed: 04/28/2010

Date Prepared: 04/28/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK/BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Benzene	<5.00	50.0	52.0	104	66-142	
Bromobenzene	<5.00	50.0	51.6	103	75-125	
Bromochloromethane	<5.00	50.0	53.9	108	73-125	
Bromodichloromethane	<5.00	50.0	58.3	117	75-125	
Bromoform	<5.00	50.0	60.6	121	75-125	
Bromomethane	<5.00	50.0	45.3	91	70-130	
MTBE	<5.00	50.0	56.4	113	65-135	
n-Butylbenzene	<5.00	50.0	52.8	106	75-125	
Sec-Butylbenzene	<5.00	50.0	55.1	110	75-125	
tert-Butylbenzene	<5.00	50.0	55.6	111	75-125	
Carbon Tetrachloride	<5.00	50.0	53.8	108	62-125	
Chlorobenzene	<5.00	50.0	54.1	108	60-133	
Chloroethane	<10.0	50.0	47.5	95	70-130	
Chloroform	<5.00	50.0	53.1	106	74-125	
Chloromethane	<10.0	50.0	48.8	98	70-130	
2-Chlorotoluene	<5.00	50.0	52.5	105	73-125	
4-Chlorotoluene	<5.00	50.0	51.9	104	74-125	
p-Cymene (p-Isopropyltoluene)	<5.00	50.0	54.7	109	75-125	
Dibromochloromethane	<5.00	50.0	59.9	120	73-125	
1,2-Dibromo-3-Chloropropane	<5.00	50.0	61.3	123	59-125	
Dibromomethane	<5.00	50.0	52.2	104	69-127	
1,2-Dichlorobenzene	<5.00	50.0	52.4	105	75-125	
1,3-Dichlorobenzene	<5.00	50.0	53.3	107	75-125	
1,4-Dichlorobenzene	<5.00	50.0	51.5	103	75-125	
Dichlorodifluoromethane	<5.00	50.0	52.5	105	70-130	
1,1-Dichloroethane	<5.00	50.0	55.0	110	72-125	
1,2-Dichloroethane	<5.00	50.0	51.7	103	68-127	
1,1-Dichloroethene	<5.00	50.0	49.8	100	59-172	
cis-1,2-Dichloroethene	<5.00	50.0	50.6	101	75-125	
trans-1,2-dichloroethene	<5.00	50.0	50.3	101	75-125	
1,2-Dichloropropane	<5.00	50.0	53.0	106	74-125	
1,3-Dichloropropane	<5.00	50.0	52.5	105	75-125	
2,2-Dichloropropane	<5.00	50.0	58.6	117	75-125	

Blank Spike Recovery [D] = $100 \times [C]/[B]$

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID:

EQ24

Lab Batch #: 804536

Sample: 561998-1-BKS

Matrix: Water

Date Analyzed: 04/28/2010

Date Prepared: 04/28/2010

Analyst: CYE

Reporting Units: ug/L

Batch #: 1

BLANK/BLANK SPIKE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
1,1-Dichloropropene	<5.00	50.0	45.6	91	75-125	
cis-1,3-Dichloropropene	<5.00	50.0	58.4	117	74-125	
trans-1,3-dichloropropene	<5.00	50.0	57.4	115	66-125	
Ethylbenzene	<5.00	50.0	51.3	103	75-125	
Hexachlorobutadiene	<5.00	50.0	57.1	114	75-125	
isopropylbenzene	<5.00	50.0	52.9	106	75-125	
Methylene Chloride	<5.00	50.0	61.9	124	75-125	
Naphthalene	<10.0	50.0	57.1	114	75-125	
n-Propylbenzene	<5.00	50.0	52.5	105	75-125	
Styrene	<5.00	50.0	52.0	104	75-125	
1,1,1,2-Tetrachloroethane	<5.00	50.0	54.0	108	72-125	
1,1,2,2-Tetrachloroethane	<5.00	50.0	55.7	111	74-125	
Tetrachloroethylene	<5.00	50.0	52.1	104	71-125	
Toluene	<5.00	50.0	51.1	102	59-139	
1,2,3-Trichlorobenzene	<5.00	50.0	55.9	112	75-137	
1,2,4-Trichlorobenzene	<5.00	50.0	56.2	112	75-135	
1,1,1-Trichloroethane	<5.00	50.0	50.2	100	75-125	
1,1,2-Trichloroethane	<5.00	50.0	53.3	107	75-127	
Trichloroethene	<5.00	50.0	49.2	98	62-137	
Trichlorofluoromethane	<5.00	50.0	59.0	118	67-125	
1,2,3-Trichloropropane	<5.00	50.0	57.4	115	75-125	
1,2,4-Trimethylbenzene	<5.00	50.0	53.1	106	75-125	
1,3,5-Trimethylbenzene	<5.00	50.0	53.4	107	70-125	
o-Xylene	<5.00	50.0	53.6	107	75-125	
m,p-Xylenes	<10.0	100	104	104	75-125	
Vinyl Chloride	<2.00	50.0	45.9	92	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 803446

QC- Sample ID: 369409-001 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/20/2010

Date Prepared: 04/20/2010

Analyst: CYE

Reporting Units: ug/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<5.00	50.0	43.1	86	50.0	44.3	89	3	66-142	21	
Bromobenzene	<5.00	50.0	46.0	92	50.0	44.9	90	2	75-125	20	
Bromochloromethane	<5.00	50.0	45.0	90	50.0	48.0	96	6	73-125	20	
Bromodichloromethane	<5.00	50.0	51.8	104	50.0	52.3	105	1	75-125	20	
Bromoform	<5.00	50.0	45.9	92	50.0	47.0	94	2	75-125	20	
Bromomethane	<5.00	50.0	59.4	119	50.0	63.4	127	7	70-130	20	
MTBE	<5.00	50.0	50.5	101	50.0	55.5	111	9	65-135	20	
n-Butylbenzene	<5.00	50.0	47.2	94	50.0	48.8	98	3	75-125	20	
Sec-Butylbenzene	<5.00	50.0	48.6	97	50.0	48.5	97	0	75-125	20	
tert-Butylbenzene	<5.00	50.0	49.6	99	50.0	48.1	96	3	75-125	20	
Carbon Tetrachloride	<5.00	50.0	55.1	110	50.0	55.7	111	1	62-125	20	
Chlorobenzene	<5.00	50.0	46.3	93	50.0	46.4	93	0	60-133	21	
Chloroethane	<10.0	50.0	42.9	86	50.0	48.8	98	13	70-130	20	
Chloroform	7.96	50.0	59.9	104	50.0	63.4	111	6	74-125	20	
Chloromethane	<10.0	50.0	42.0	84	50.0	44.8	90	6	70-130	20	
2-Chlorotoluene	<5.00	50.0	44.7	89	50.0	44.6	89	0	73-125	20	
4-Chlorotoluene	<5.00	50.0	49.7	99	50.0	49.5	99	0	74-125	20	
p-Cymene (p-Isopropyltoluene)	<5.00	50.0	50.1	100	50.0	50.2	100	0	75-125	20	
Dibromochloromethane	<5.00	50.0	48.8	98	50.0	48.5	97	1	73-125	20	
1,2-Dibromo-3-Chloropropane	<5.00	50.0	45.8	92	50.0	48.8	98	6	59-125	28	
Dibromomethane	<5.00	50.0	47.0	94	50.0	45.8	92	3	69-127	23	
1,2-Dichlorobenzene	<5.00	50.0	45.8	92	50.0	47.6	95	4	75-125	20	
1,3-Dichlorobenzene	<5.00	50.0	47.6	95	50.0	47.5	95	0	75-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, I = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 803446

QC- Sample ID: 369409-001 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/20/2010

Date Prepared: 04/20/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
1,4-Dichlorobenzene	<5.00	50.0	45.8	92	50.0	45.6	91	0	75-125	20	
Dichlorodifluoromethane	<5.00	50.0	50.2	100	50.0	53.8	108	7	70-130	23	
1,1-Dichloroethane	<5.00	50.0	50.1	100	50.0	53.7	107	7	72-125	20	
1,2-Dichloroethane	<5.00	50.0	55.1	110	50.0	57.3	115	4	68-127	20	
1,1-Dichloroethene	<5.00	50.0	40.9	82	50.0	45.4	91	10	59-172	22	
cis-1,2-Dichloroethene	<5.00	50.0	42.1	84	50.0	44.0	88	4	75-125	20	
trans-1,2-dichloroethene	<5.00	50.0	42.0	84	50.0	45.6	91	8	75-125	20	
1,2-Dichloropropane	<5.00	50.0	45.8	92	50.0	46.5	93	2	74-125	20	
1,3-Dichloropropane	<5.00	50.0	43.8	88	50.0	43.3	87	1	75-125	20	
2,2-Dichloropropane	<5.00	50.0	54.1	108	50.0	58.9	118	8	75-125	20	
1,1-Dichloropropene	<5.00	50.0	41.6	83	50.0	43.6	87	5	75-125	20	
cis-1,3-Dichloropropene	<5.00	50.0	48.9	98	50.0	47.6	95	3	74-125	20	
trans-1,3-dichloropropene	<5.00	50.0	49.9	100	50.0	47.8	96	4	66-125	20	
Ethylbenzene	<5.00	50.0	46.6	93	50.0	47.2	94	1	75-125	20	
Hexachlorobutadiene	<5.00	50.0	46.1	92	50.0	48.8	98	6	75-125	20	
isopropylbenzene	<5.00	50.0	47.0	94	50.0	49.4	99	5	75-125	20	
Methylene Chloride	<5.00	50.0	40.4	81	50.0	43.9	88	8	75-125	35	
Naphthalene	<10.0	50.0	45.5	91	50.0	46.4	93	2	75-125	20	
n-Propylbenzene	<5.00	50.0	47.5	95	50.0	47.1	94	1	75-125	20	
Styrene	<5.00	50.0	46.3	93	50.0	47.5	95	3	75-125	51	
1,1,1,2-Tetrachloroethane	<5.00	50.0	48.7	97	50.0	50.5	101	4	72-125	20	
1,1,2,2-Tetrachloroethane	<5.00	50.0	43.1	86	50.0	43.2	86	0	74-125	31	
Tetrachloroethylene	<5.00	50.0	42.6	85	50.0	44.3	89	4	71-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 803446

QC- Sample ID: 369409-001 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/20/2010

Date Prepared: 04/20/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Toluene	<5.00	50.0	42.3	85	50.0	42.7	85	1	59-139	21	
1,2,3-Trichlorobenzene	<5.00	50.0	44.6	89	50.0	44.2	88	1	75-137	20	
1,2,4-Trichlorobenzene	<5.00	50.0	44.5	89	50.0	46.4	93	4	75-135	20	
1,1,1-Trichloroethane	<5.00	50.0	51.3	103	50.0	56.3	113	9	75-125	20	
1,1,2-Trichloroethane	<5.00	50.0	44.1	88	50.0	43.5	87	1	75-127	20	
Trichloroethene	<5.00	50.0	46.3	93	50.0	47.1	94	2	62-137	24	
Trichlorofluoromethane	<5.00	50.0	56.8	114	50.0	62.1	124	9	67-125	20	
1,2,3-Trichloropropane	<5.00	50.0	49.4	99	50.0	48.7	97	1	75-125	20	
1,2,4-Trimethylbenzene	<5.00	50.0	50.2	100	50.0	50.6	101	1	75-125	20	
1,3,5-Trimethylbenzene	<5.00	50.0	50.0	100	50.0	50.1	100	0	70-125	20	
o-Xylene	<5.00	50.0	45.9	92	50.0	47.1	94	3	75-125	20	
m,p-Xylenes	<10.0	100	89.8	90	100	92.2	92	3	75-125	20	
Vinyl Chloride	<2.00	50.0	46.2	92	50.0	49.8	100	8	75-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not
ApplicableN = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 803645

QC- Sample ID: 369409-003 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/21/2010

Date Prepared: 04/21/2010

Analyst: CYE

Reporting Units: ug/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	122	50.0	156	68	50.0	157	70	1	66-142	21	
Bromobenzene	<5.00	50.0	46.1	92	50.0	45.5	91	1	75-125	20	
Bromochloromethane	<5.00	50.0	43.9	88	50.0	43.9	88	0	73-125	20	
Bromodichloromethane	<5.00	50.0	52.5	105	50.0	51.7	103	2	75-125	20	
Bromoform	<5.00	50.0	46.2	92	50.0	47.1	94	2	75-125	20	
Bromomethane	<5.00	50.0	50.7	101	50.0	51.8	104	2	70-130	20	
MTBE	<5.00	50.0	52.4	105	50.0	52.7	105	1	65-135	20	
n-Butylbenzene	10.9	50.0	59.7	98	50.0	57.8	94	3	75-125	20	
Sec-Butylbenzene	7.19	50.0	56.1	98	50.0	54.2	94	3	75-125	20	
tert-Butylbenzene	<5.00	50.0	50.7	101	50.0	50.1	100	1	75-125	20	
Carbon Tetrachloride	<5.00	50.0	55.1	110	50.0	55.8	112	1	62-125	20	
Chlorobenzene	<5.00	50.0	44.9	90	50.0	45.6	91	2	60-133	21	
Chloroethane	<10.0	50.0	42.1	84	50.0	44.6	89	6	70-130	20	
Chloroform	<5.00	50.0	52.6	105	50.0	52.0	104	1	74-125	20	
Chloromethane	<10.0	50.0	35.9	72	50.0	36.5	73	2	70-130	20	
2-Chlorotoluene	<5.00	50.0	45.1	90	50.0	45.0	90	0	73-125	20	
4-Chlorotoluene	<5.00	50.0	50.4	101	50.0	49.8	100	1	74-125	20	
p-Cymene (p-Isopropyltoluene)	<5.00	50.0	51.4	103	50.0	49.4	99	4	75-125	20	
Dibromochloromethane	<5.00	50.0	49.1	98	50.0	50.0	100	2	73-125	20	
1,2-Dibromo-3-Chloropropane	<5.00	50.0	51.4	103	50.0	53.4	107	4	59-125	28	
Dibromomethane	<5.00	50.0	45.0	90	50.0	45.9	92	2	69-127	23	
1,2-Dichlorobenzene	<5.00	50.0	46.4	93	50.0	45.8	92	1	75-125	20	
1,3-Dichlorobenzene	<5.00	50.0	47.0	94	50.0	46.6	93	1	75-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 803645

QC- Sample ID: 369409-003 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/21/2010

Date Prepared: 04/21/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
1,4-Dichlorobenzene	<5.00	50.0	45.9	92	50.0	45.3	91	1	75-125	20	
Dichlorodifluoromethane	<5.00	50.0	48.3	97	50.0	47.6	95	1	70-130	23	
1,1-Dichloroethane	<5.00	50.0	50.0	100	50.0	50.1	100	0	72-125	20	
1,2-Dichloroethane	<5.00	50.0	61.1	122	50.0	61.5	123	1	68-127	20	
1,1-Dichloroethene	<5.00	50.0	41.1	82	50.0	41.4	83	1	59-172	22	
cis-1,2-Dichloroethene	<5.00	50.0	42.3	85	50.0	41.0	82	3	75-125	20	
trans-1,2-dichloroethene	<5.00	50.0	40.6	81	50.0	42.5	85	5	75-125	20	
1,2-Dichloropropane	<5.00	50.0	46.1	92	50.0	46.1	92	0	74-125	20	
1,3-Dichloropropane	<5.00	50.0	43.2	86	50.0	44.1	88	2	75-125	20	
2,2-Dichloropropane	<5.00	50.0	54.6	109	50.0	55.8	112	2	75-125	20	
1,1-Dichloropropene	<5.00	50.0	42.0	84	50.0	40.2	80	4	75-125	20	
cis-1,3-Dichloropropene	<5.00	50.0	48.6	97	50.0	47.5	95	2	74-125	20	
trans-1,3-dichloropropene	<5.00	50.0	49.2	98	50.0	48.9	98	1	66-125	20	
Ethylbenzene	<5.00	50.0	50.2	100	50.0	49.8	100	1	75-125	20	
Hexachlorobutadiene	<5.00	50.0	51.2	102	50.0	47.9	96	7	75-125	20	
isopropylbenzene	63.1	50.0	106	86	50.0	106	86	0	75-125	20	
Methylene Chloride	<5.00	50.0	40.3	81	50.0	41.6	83	3	75-125	35	
Naphthalene	<10.0	50.0	50.6	101	50.0	50.0	100	1	75-125	20	
n-Propylbenzene	107	50.0	148	82	50.0	143	72	3	75-125	20	X
Styrene	<5.00	50.0	45.1	90	50.0	45.4	91	1	75-125	51	
1,1,1,2-Tetrachloroethane	<5.00	50.0	49.7	99	50.0	50.4	101	1	72-125	20	
1,1,2,2-Tetrachloroethane	<5.00	50.0	45.5	91	50.0	44.5	89	2	74-125	31	
Tetrachloroethylene	<5.00	50.0	43.0	86	50.0	43.6	87	1	71-125	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 803645

QC- Sample ID: 369409-003 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/21/2010

Date Prepared: 04/21/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Toluene	<5.00	50.0	43.7	87	50.0	44.0	88	1	59-139	21	
1,2,3-Trichlorobenzene	<5.00	50.0	45.8	92	50.0	46.3	93	1	75-137	20	
1,2,4-Trichlorobenzene	<5.00	50.0	47.0	94	50.0	45.7	91	3	75-135	20	
1,1,1-Trichloroethane	<5.00	50.0	52.7	105	50.0	52.5	105	0	75-125	20	
1,1,2-Trichloroethane	<5.00	50.0	45.0	90	50.0	45.5	91	1	75-127	20	
Trichloroethene	<5.00	50.0	46.8	94	50.0	47.8	96	2	62-137	24	
Trichlorofluoromethane	<5.00	50.0	55.6	111	50.0	56.0	112	1	67-125	20	
1,2,3-Trichloropropane	<5.00	50.0	49.9	100	50.0	49.1	98	2	75-125	20	
1,2,4-Trimethylbenzene	<5.00	50.0	51.7	103	50.0	50.2	100	3	75-125	20	
1,3,5-Trimethylbenzene	<5.00	50.0	50.6	101	50.0	49.3	99	3	70-125	20	
o-Xylene	<5.00	50.0	46.2	92	50.0	47.5	95	3	75-125	20	
m,p-Xylenes	<10.0	100	93.5	94	100	94.5	95	1	75-125	20	
Vinyl Chloride	<2.00	50.0	40.7	81	50.0	40.9	82	0	75-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * [(C - F) / (C + F)]$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 803828

QC- Sample ID: 369409-004 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/22/2010

Date Prepared: 04/22/2010

Analyst: CYE

Reporting Units: ug/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<5.00	50.0	52.1	104	50.0	49.7	99	5	66-142	21	
Bromobenzene	<5.00	50.0	50.1	100	50.0	51.2	102	2	75-125	20	
Bromochloromethane	<5.00	50.0	53.3	107	50.0	53.1	106	0	73-125	20	
Bromodichloromethane	<5.00	50.0	53.4	107	50.0	53.1	106	1	75-125	20	
Bromoform	<5.00	50.0	52.4	105	50.0	55.7	111	6	75-125	20	
Bromomethane	<5.00	50.0	55.3	111	50.0	46.4	93	18	70-130	20	
MTBE	<5.00	50.0	61.9	124	50.0	60.1	120	3	65-135	20	
n-Butylbenzene	<5.00	50.0	52.0	104	50.0	50.1	100	4	75-125	20	
Sec-Butylbenzene	<5.00	50.0	53.0	106	50.0	51.4	103	3	75-125	20	
tert-Butylbenzene	<5.00	50.0	53.0	106	50.0	53.6	107	1	75-125	20	
Carbon Tetrachloride	<5.00	50.0	50.4	101	50.0	48.9	98	3	62-125	20	
Chlorobenzene	<5.00	50.0	53.1	106	50.0	52.4	105	1	60-133	21	
Chloroethane	<10.0	50.0	54.8	110	50.0	48.2	96	13	70-130	20	
Chloroform	<5.00	50.0	53.3	107	50.0	51.9	104	3	74-125	20	
Chloromethane	<10.0	50.0	59.7	119	50.0	53.1	106	12	70-130	20	
2-Chlorotoluene	<5.00	50.0	51.0	102	50.0	50.7	101	1	73-125	20	
4-Chlorotoluene	<5.00	50.0	53.4	107	50.0	51.7	103	3	74-125	20	
p-Cymene (p-Isopropyltoluene)	<5.00	50.0	54.3	109	50.0	52.3	105	4	75-125	20	
Dibromochloromethane	<5.00	50.0	52.5	105	50.0	55.0	110	5	73-125	20	
1,2-Dibromo-3-Chloropropane	<5.00	50.0	48.3	97	50.0	53.9	108	11	59-125	28	
Dibromomethane	<5.00	50.0	51.0	102	50.0	51.5	103	1	69-127	23	
1,2-Dichlorobenzene	<5.00	50.0	52.7	105	50.0	51.6	103	2	75-125	20	
1,3-Dichlorobenzene	<5.00	50.0	51.4	103	50.0	51.1	102	1	75-125	20	

Matrix Spike Percent Recovery $[D] = 100 \times (C-A)/B$
Relative Percent Difference $RPD = 200 \times |(C-F)/(C+F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 \times (F-A)/E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 803828

QC- Sample ID: 369409-004 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/22/2010

Date Prepared: 04/22/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
1,4-Dichlorobenzene	<5.00	50.0	51.1	102	50.0	51.6	103	1	75-125	20	
Dichlorodifluoromethane	<5.00	50.0	58.2	116	50.0	52.8	106	10	70-130	23	
1,1-Dichloroethane	<5.00	50.0	57.7	115	50.0	55.0	110	5	72-125	20	
1,2-Dichloroethane	<5.00	50.0	53.7	107	50.0	53.1	106	1	68-127	20	
1,1-Dichloroethene	<5.00	50.0	50.1	100	50.0	50.0	100	0	59-172	22	
cis-1,2-Dichloroethene	<5.00	50.0	53.0	106	50.0	52.3	105	1	75-125	20	
trans-1,2-dichloroethene	<5.00	50.0	54.2	108	50.0	51.2	102	6	75-125	20	
1,2-Dichloropropane	<5.00	50.0	53.5	107	50.0	54.9	110	3	74-125	20	
1,3-Dichloropropane	<5.00	50.0	49.6	99	50.0	53.8	108	8	75-125	20	
2,2-Dichloropropane	<5.00	50.0	57.3	115	50.0	50.6	101	12	75-125	20	
1,1-Dichloropropene	<5.00	50.0	47.4	95	50.0	45.6	91	4	75-125	20	
cis-1,3-Dichloropropene	<5.00	50.0	53.1	106	50.0	55.5	111	4	74-125	20	
trans-1,3-dichloropropene	<5.00	50.0	53.3	107	50.0	56.2	112	5	66-125	20	
Ethylbenzene	<5.00	50.0	52.1	104	50.0	50.0	100	4	75-125	20	
Hexachlorobutadiene	<5.00	50.0	49.9	100	50.0	48.0	96	4	75-125	20	
isopropylbenzene	<5.00	50.0	53.6	107	50.0	50.7	101	6	75-125	20	
Methylene Chloride	<5.00	50.0	52.2	104	50.0	51.5	103	1	75-125	35	
Naphthalene	<10.0	50.0	55.8	112	50.0	57.0	114	2	75-125	20	
n-Propylbenzene	<5.00	50.0	51.6	103	50.0	53.3	107	3	75-125	20	
Styrene	<5.00	50.0	53.8	108	50.0	53.2	106	1	75-125	51	
1,1,1,2-Tetrachloroethane	<5.00	50.0	53.4	107	50.0	52.4	105	2	72-125	20	
1,1,2,2-Tetrachloroethane	<5.00	50.0	50.2	100	50.0	54.9	110	9	74-125	31	
Tetrachloroethylene	<5.00	50.0	53.7	107	50.0	52.2	104	3	71-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * [(C - F) / (C + F)]$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 803828

QC- Sample ID: 369409-004 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/22/2010

Date Prepared: 04/22/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Toluene	<5.00	50.0	49.6	99	50.0	48.9	98	1	59-139	21	
1,2,3-Trichlorobenzene	<5.00	50.0	55.3	111	50.0	52.2	104	6	75-137	20	
1,2,4-Trichlorobenzene	<5.00	50.0	55.4	111	50.0	51.1	102	8	75-135	20	
1,1,1-Trichloroethane	<5.00	50.0	49.9	100	50.0	46.9	94	6	75-125	20	
1,1,2-Trichloroethane	<5.00	50.0	51.2	102	50.0	54.0	108	5	75-127	20	
Trichloroethene	<5.00	50.0	50.1	100	50.0	50.2	100	0	62-137	24	
Trichlorofluoromethane	<5.00	50.0	61.4	123	50.0	52.7	105	15	67-125	20	
1,2,3-Trichloropropane	<5.00	50.0	51.8	104	50.0	59.6	119	14	75-125	20	
1,2,4-Trimethylbenzene	<5.00	50.0	54.2	108	50.0	51.7	103	5	75-125	20	
1,3,5-Trimethylbenzene	<5.00	50.0	50.8	102	50.0	50.7	101	0	70-125	20	
o-Xylene	<5.00	50.0	54.4	109	50.0	51.9	104	5	75-125	20	
m,p-Xylenes	<10.0	100	106	106	100	104	104	2	75-125	20	
Vinyl Chloride	<2.00	50.0	49.3	99	50.0	44.2	88	11	75-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * [(C - F) / (C + F)]$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 804058

QC- Sample ID: 369409-025 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/26/2010

Date Prepared: 04/26/2010

Analyst: CYE

Reporting Units: ug/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	37.6	50.0	85.5	96	50.0	90.4	106	6	66-142	21	
Bromobenzene	<5.00	50.0	50.0	100	50.0	52.7	105	5	75-125	20	
Bromochloromethane	<5.00	50.0	47.5	95	50.0	51.3	103	8	73-125	20	
Bromodichloromethane	<5.00	50.0	55.0	110	50.0	57.9	116	5	75-125	20	
Bromoform	<5.00	50.0	59.1	118	50.0	59.8	120	1	75-125	20	
Bromomethane	<5.00	50.0	35.6	71	50.0	36.6	73	3	70-130	20	
MTBE	14.6	50.0	70.3	111	50.0	72.3	115	3	65-135	20	
n-Butylbenzene	<5.00	50.0	53.0	106	50.0	56.0	112	6	75-125	20	
Sec-Butylbenzene	<5.00	50.0	55.9	112	50.0	58.9	118	5	75-125	20	
tert-Butylbenzene	<5.00	50.0	54.3	109	50.0	58.1	116	7	75-125	20	
Carbon Tetrachloride	<5.00	50.0	47.0	94	50.0	50.9	102	8	62-125	20	
Chlorobenzene	<5.00	50.0	51.9	104	50.0	54.4	109	5	60-133	21	
Chloroethane	<10.0	50.0	40.2	80	50.0	40.4	81	0	70-130	20	
Chloroform	<5.00	50.0	49.6	99	50.0	53.0	106	7	74-125	20	
Chloromethane	<10.0	50.0	37.3	75	50.0	38.3	77	3	70-130	20	
2-Chlorotoluene	<5.00	50.0	49.0	98	50.0	52.6	105	7	73-125	20	
4-Chlorotoluene	<5.00	50.0	49.1	98	50.0	51.6	103	5	74-125	20	
p-Cymene (p-Isopropyltoluene)	<5.00	50.0	49.6	99	50.0	52.1	104	5	75-125	20	
Dibromochloromethane	<5.00	50.0	58.1	116	50.0	60.2	120	4	73-125	20	
1,2-Dibromo-3-Chloropropane	<5.00	50.0	58.5	117	50.0	57.1	114	2	59-125	28	
Dibromomethane	<5.00	50.0	49.5	99	50.0	52.3	105	6	69-127	23	
1,2-Dichlorobenzene	<5.00	50.0	51.7	103	50.0	54.4	109	5	75-125	20	
1,3-Dichlorobenzene	<5.00	50.0	53.0	106	50.0	55.1	110	4	75-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 804058

QC- Sample ID: 369409-025 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/26/2010

Date Prepared: 04/26/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
1,4-Dichlorobenzene	<5.00	50.0	50.1	100	50.0	52.8	106	5	75-125	20	
Dichlorodifluoromethane	<5.00	50.0	44.1	88	50.0	45.8	92	4	70-130	23	
1,1-Dichloroethane	<5.00	50.0	50.2	100	50.0	52.7	105	5	72-125	20	
1,2-Dichloroethane	<5.00	50.0	49.4	99	50.0	51.9	104	5	68-127	20	
1,1-Dichloroethene	<5.00	50.0	42.1	84	50.0	44.6	89	6	59-172	22	
cis-1,2-Dichloroethene	<5.00	50.0	46.0	92	50.0	48.8	98	6	75-125	20	
trans-1,2-dichloroethene	<5.00	50.0	41.4	83	50.0	44.6	89	7	75-125	20	
1,2-Dichloropropane	<5.00	50.0	53.0	106	50.0	54.6	109	3	74-125	20	
1,3-Dichloropropane	<5.00	50.0	50.8	102	50.0	52.4	105	3	75-125	20	
2,2-Dichloropropane	<5.00	50.0	51.5	103	50.0	52.5	105	2	75-125	20	
1,1-Dichloropropene	<5.00	50.0	38.2	76	50.0	41.8	84	9	75-125	20	
cis-1,3-Dichloropropene	<5.00	50.0	52.7	105	50.0	56.9	114	8	74-125	20	
trans-1,3-dichloropropene	<5.00	50.0	52.9	106	50.0	55.7	111	5	66-125	20	
Ethylbenzene	<5.00	50.0	49.9	100	50.0	52.6	105	5	75-125	20	
Hexachlorobutadiene	<5.00	50.0	52.7	105	50.0	54.6	109	4	75-125	20	
isopropylbenzene	53.4	50.0	105	103	50.0	108	109	3	75-125	20	
Methylene Chloride	<5.00	50.0	44.8	90	50.0	47.4	95	6	75-125	35	
Naphthalene	<10.0	50.0	54.9	110	50.0	55.6	111	1	75-125	20	
n-Propylbenzene	51.3	50.0	101	99	50.0	104	105	3	75-125	20	
Styrene	<5.00	50.0	44.2	88	50.0	43.1	86	3	75-125	51	
1,1,1,2-Tetrachloroethane	<5.00	50.0	53.8	108	50.0	55.2	110	3	72-125	20	
1,1,2,2-Tetrachloroethane	<5.00	50.0	57.7	115	50.0	59.6	119	3	74-125	31	
Tetrachloroethylene	<5.00	50.0	47.3	95	50.0	49.6	99	5	71-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries

Project Name: 25 Paidge Avenue



Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 804058

QC- Sample ID: 369409-025 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/26/2010

Date Prepared: 04/26/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Toluene	<5.00	50.0	48.2	96	50.0	50.9	102	5	59-139	21	
1,2,3-Trichlorobenzene	<5.00	50.0	52.8	106	50.0	54.8	110	4	75-137	20	
1,2,4-Trichlorobenzene	<5.00	50.0	52.0	104	50.0	54.3	109	4	75-135	20	
1,1,1-Trichloroethane	<5.00	50.0	44.3	89	50.0	47.2	94	6	75-125	20	
1,1,2-Trichloroethane	<5.00	50.0	56.3	113	50.0	56.6	113	1	75-127	20	
Trichloroethene	<5.00	50.0	46.6	93	50.0	50.4	101	8	62-137	24	
Trichlorofluoromethane	<5.00	50.0	47.4	95	50.0	48.9	98	3	67-125	20	
1,2,3-Trichloropropane	<5.00	50.0	56.4	113	50.0	58.6	117	4	75-125	20	
1,2,4-Trimethylbenzene	<5.00	50.0	47.3	95	50.0	47.5	95	0	75-125	20	
1,3,5-Trimethylbenzene	51.6	50.0	102	101	50.0	106	109	4	70-125	20	
o-Xylene	5.22	50.0	55.7	101	50.0	57.5	105	3	75-125	20	
m,p-Xylenes	<10.0	100	104	104	100	108	108	4	75-125	20	
Vinyl Chloride	<2.00	50.0	37.0	74	50.0	38.3	77	3	75-125	20	X

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * [(C - F) / (C + F)]$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 804067

QC- Sample ID: 369409-017 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/23/2010

Date Prepared: 04/23/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260 Analytes	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<5.00	50.0	46.9	94	50.0	48.2	96	3	66-142	21	
Bromobenzene	<5.00	50.0	49.5	99	50.0	49.9	100	1	75-125	20	
Bromochloromethane	<5.00	50.0	48.5	97	50.0	49.2	98	1	73-125	20	
Bromodichloromethane	<5.00	50.0	51.1	102	50.0	52.4	105	3	75-125	20	
Bromoform	<5.00	50.0	49.1	98	50.0	49.3	99	0	75-125	20	
Bromomethane	<5.00	50.0	41.9	84	50.0	44.7	89	6	70-130	20	
MTBE	17.5	50.0	65.1	95	50.0	69.5	104	7	65-135	20	
n-Butylbenzene	<5.00	50.0	49.8	100	50.0	50.0	100	0	75-125	20	
Sec-Butylbenzene	<5.00	50.0	52.4	105	50.0	51.7	103	1	75-125	20	
tert-Butylbenzene	<5.00	50.0	51.9	104	50.0	52.1	104	0	75-125	20	
Carbon Tetrachloride	<5.00	50.0	48.0	96	50.0	49.9	100	4	62-125	20	
Chlorobenzene	<5.00	50.0	50.0	100	50.0	51.3	103	3	60-133	21	
Chloroethane	<10.0	50.0	42.7	85	50.0	44.9	90	5	70-130	20	
Chloroform	<5.00	50.0	48.6	97	50.0	49.4	99	2	74-125	20	
Chloromethane	<10.0	50.0	43.1	86	50.0	42.6	85	1	70-130	20	
2-Chlorotoluene	<5.00	50.0	49.2	98	50.0	50.3	101	2	73-125	20	
4-Chlorotoluene	<5.00	50.0	49.6	99	50.0	50.2	100	1	74-125	20	
p-Cymene (p-Isopropyltoluene)	<5.00	50.0	51.1	102	50.0	51.5	103	1	75-125	20	
Dibromochloromethane	<5.00	50.0	52.3	105	50.0	53.4	107	2	73-125	20	
1,2-Dibromo-3-Chloropropane	<5.00	50.0	44.7	89	50.0	46.3	93	4	59-125	28	
Dibromomethane	<5.00	50.0	46.4	93	50.0	47.9	96	3	69-127	23	
1,2-Dichlorobenzene	<5.00	50.0	49.8	100	50.0	50.1	100	1	75-125	20	
1,3-Dichlorobenzene	<5.00	50.0	51.1	102	50.0	51.0	102	0	75-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 804067

QC- Sample ID: 369409-017 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/23/2010

Date Prepared: 04/23/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
1,4-Dichlorobenzene	<5.00	50.0	49.4	99	50.0	50.0	100	1	75-125	20	
Dichlorodifluoromethane	<5.00	50.0	49.3	99	50.0	48.3	97	2	70-130	23	
1,1-Dichloroethane	<5.00	50.0	50.3	101	50.0	51.7	103	3	72-125	20	
1,2-Dichloroethane	<5.00	50.0	47.2	94	50.0	47.3	95	0	68-127	20	
1,1-Dichloroethene	<5.00	50.0	47.2	94	50.0	47.6	95	1	59-172	22	
cis-1,2-Dichloroethene	<5.00	50.0	46.1	92	50.0	47.6	95	3	75-125	20	
trans-1,2-dichloroethene	<5.00	50.0	47.0	94	50.0	47.0	94	0	75-125	20	
1,2-Dichloropropane	<5.00	50.0	50.1	100	50.0	51.0	102	2	74-125	20	
1,3-Dichloropropane	<5.00	50.0	46.7	93	50.0	48.4	97	4	75-125	20	
2,2-Dichloropropane	<5.00	50.0	49.2	98	50.0	51.9	104	5	75-125	20	
1,1-Dichloropropene	<5.00	50.0	41.7	83	50.0	42.9	86	3	75-125	20	
cis-1,3-Dichloropropene	<5.00	50.0	50.7	101	50.0	51.7	103	2	74-125	20	
trans-1,3-dichloropropene	<5.00	50.0	48.5	97	50.0	49.5	99	2	66-125	20	
Ethylbenzene	<5.00	50.0	47.1	94	50.0	48.8	98	4	75-125	20	
Hexachlorobutadiene	<5.00	50.0	52.0	104	50.0	53.4	107	3	75-125	20	
isopropylbenzene	<5.00	50.0	48.2	96	50.0	50.3	101	4	75-125	20	
Methylene Chloride	<5.00	50.0	47.8	96	50.0	49.7	99	4	75-125	35	
Naphthalene	<10.0	50.0	50.2	100	50.0	52.7	105	5	75-125	20	
n-Propylbenzene	<5.00	50.0	51.1	102	50.0	50.2	100	2	75-125	20	
Styrene	<5.00	50.0	47.7	95	50.0	49.2	98	3	75-125	51	
1,1,1,2-Tetrachloroethane	<5.00	50.0	47.8	96	50.0	51.2	102	7	72-125	20	
1,1,2,2-Tetrachloroethane	<5.00	50.0	49.7	99	50.0	50.3	101	1	74-125	31	
Tetrachloroethylene	<5.00	50.0	49.1	98	50.0	49.6	99	1	71-125	20	

Matrix Spike Percent Recovery $[D] = 100 \cdot (C-A)/B$
Relative Percent Difference $RPD = 200 \cdot |(C-F)/(C+F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 \cdot (F-A)/E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 804067

QC- Sample ID: 369409-017 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/23/2010

Date Prepared: 04/23/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Toluene	<5.00	50.0	46.8	94	50.0	47.2	94	1	59-139	21	
1,2,3-Trichlorobenzene	<5.00	50.0	52.9	106	50.0	55.0	110	4	75-137	20	
1,2,4-Trichlorobenzene	<5.00	50.0	52.5	105	50.0	53.6	107	2	75-135	20	
1,1,1-Trichloroethane	<5.00	50.0	44.8	90	50.0	46.0	92	3	75-125	20	
1,1,2-Trichloroethane	<5.00	50.0	46.9	94	50.0	49.0	98	4	75-127	20	
Trichloroethene	<5.00	50.0	47.5	95	50.0	48.6	97	2	62-137	24	
Trichlorofluoromethane	<5.00	50.0	50.6	101	50.0	53.2	106	5	67-125	20	
1,2,3-Trichloropropane	<5.00	50.0	48.3	97	50.0	49.7	99	3	75-125	20	
1,2,4-Trimethylbenzene	<5.00	50.0	49.6	99	50.0	50.0	100	1	75-125	20	
1,3,5-Trimethylbenzene	<5.00	50.0	49.6	99	50.0	49.5	99	0	70-125	20	
o-Xylene	<5.00	50.0	48.9	98	50.0	50.2	100	3	75-125	20	
m,p-Xylenes	<10.0	100	97.4	97	100	100	100	3	75-125	20	
Vinyl Chloride	<2.00	50.0	42.5	85	50.0	41.9	84	1	75-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * |(C - F) / (C + F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 804536

QC- Sample ID: 370094-006 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/28/2010

Date Prepared: 04/28/2010

Analyst: CYE

Reporting Units: ug/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<5.00	50.0	50.3	101	50.0	48.8	98	3	66-142	21	
Bromobenzene	<0.000	50.0	48.8	98	50.0	50.6	101	4	75-125	20	
Bromochloromethane	<0.000	50.0	50.1	100	50.0	50.0	100	0	73-125	20	
Bromodichloromethane	<0.000	50.0	54.0	108	50.0	52.7	105	2	75-125	20	
Bromoform	<0.000	50.0	48.9	98	50.0	52.7	105	7	75-125	20	
Bromomethane	<0.000	50.0	42.6	85	50.0	42.3	85	1	70-130	20	
MTBE	<0.000	50.0	51.6	103	50.0	49.9	100	3	65-135	20	
n-Butylbenzene	<0.000	50.0	50.0	100	50.0	50.3	101	1	75-125	20	
Sec-Butylbenzene	<0.000	50.0	53.2	106	50.0	53.4	107	0	75-125	20	
tert-Butylbenzene	<0.000	50.0	53.7	107	50.0	53.1	106	1	75-125	20	
Carbon Tetrachloride	<0.000	50.0	50.5	101	50.0	49.3	99	2	62-125	20	
Chlorobenzene	<5.00	50.0	51.6	103	50.0	52.0	104	1	60-133	21	
Chloroethane	<0.000	50.0	42.1	84	50.0	41.8	84	1	70-130	20	
Chloroform	<0.000	50.0	49.5	99	50.0	48.7	97	2	74-125	20	
Chloromethane	0.970	50.0	44.0	86	50.0	43.5	85	1	70-130	20	
2-Chlorotoluene	<0.000	50.0	50.5	101	50.0	50.5	101	0	73-125	20	
4-Chlorotoluene	<0.000	50.0	50.2	100	50.0	50.5	101	1	74-125	20	
p-Cymene (p-Isopropyltoluene)	<0.000	50.0	52.7	105	50.0	51.7	103	2	75-125	20	
Dibromochloromethane	<0.000	50.0	53.8	108	50.0	54.2	108	1	73-125	20	
1,2-Dibromo-3-Chloropropane	<0.000	50.0	46.8	94	50.0	47.3	95	1	59-125	28	
Dibromomethane	<0.000	50.0	49.0	98	50.0	48.1	96	2	69-127	23	
1,2-Dichlorobenzene	<0.000	50.0	50.6	101	50.0	50.6	101	0	75-125	20	
1,3-Dichlorobenzene	<0.000	50.0	51.3	103	50.0	51.8	104	1	75-125	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*(C-F)/(C+F)

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 804536

QC- Sample ID: 370094-006 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/28/2010

Date Prepared: 04/28/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
1,4-Dichlorobenzene	<0.000	50.0	50.0	100	50.0	50.4	101	1	75-125	20	
Dichlorodifluoromethane	<0.000	50.0	47.3	95	50.0	46.7	93	1	70-130	23	
1,1-Dichloroethane	<0.000	50.0	52.1	104	50.0	52.2	104	0	72-125	20	
1,2-Dichloroethane	<5.00	50.0	48.3	97	50.0	47.0	94	3	68-127	20	
1,1-Dichloroethene	<0.000	50.0	49.3	99	50.0	48.1	96	2	59-172	22	
cis-1,2-Dichloroethene	<5.00	50.0	49.1	98	50.0	47.9	96	2	75-125	20	
trans-1,2-dichloroethene	<0.000	50.0	48.5	97	50.0	48.0	96	1	75-125	20	
1,2-Dichloropropane	<0.000	50.0	50.7	101	50.0	50.7	101	0	74-125	20	
1,3-Dichloropropane	<0.000	50.0	47.4	95	50.0	49.1	98	4	75-125	20	
2,2-Dichloropropane	<0.000	50.0	53.1	106	50.0	52.0	104	2	75-125	20	
1,1-Dichloropropene	<0.000	50.0	43.3	87	50.0	43.7	87	1	75-125	20	
cis-1,3-Dichloropropene	<0.000	50.0	53.1	106	50.0	54.5	109	3	74-125	20	
trans-1,3-dichloropropene	<0.000	50.0	50.6	101	50.0	51.5	103	2	66-125	20	
Ethylbenzene	<5.00	50.0	49.5	99	50.0	49.6	99	0	75-125	20	
Hexachlorobutadiene	<0.000	50.0	54.3	109	50.0	53.3	107	2	75-125	20	
isopropylbenzene	<5.00	50.0	50.2	100	50.0	50.6	101	1	75-125	20	
Methylene Chloride	1.89	50.0	51.1	98	50.0	49.9	96	2	75-125	35	
Naphthalene	<0.000	50.0	50.1	100	50.0	49.4	99	1	75-125	20	
n-Propylbenzene	<0.000	50.0	50.6	101	50.0	50.9	102	1	75-125	20	
Styrene	<0.000	50.0	49.8	100	50.0	50.2	100	1	75-125	51	
1,1,1,2-Tetrachloroethane	<0.000	50.0	51.4	103	50.0	51.2	102	0	72-125	20	
1,1,1,2,2-Tetrachloroethane	<0.000	50.0	50.6	101	50.0	50.7	101	0	74-125	31	
Tetrachloroethylene	<5.00	50.0	50.1	100	50.0	50.6	101	1	71-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C-A) / B$
Relative Percent Difference $RPD = 200 * |(C-F) / (C+F)|$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F-A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit



Form 3 - MS / MSD Recoveries



Project Name: 25 Paidge Avenue

Work Order #: 369409

Project ID: EQ24

Lab Batch ID: 804536

QC- Sample ID: 370094-006 S

Batch #: 1 Matrix: Water

Date Analyzed: 04/28/2010

Date Prepared: 04/28/2010

Analyst: CYE

Reporting Units: ug/L

VOAs by SW-846 8260	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
Toluene	2.75	50.0	51.5	98	50.0	51.3	97	0	59-139	21	
1,2,3-Trichlorobenzene	<0.000	50.0	53.4	107	50.0	51.4	103	4	75-137	20	
1,2,4-Trichlorobenzene	<0.000	50.0	53.3	107	50.0	53.1	106	0	75-135	20	
1,1,1-Trichloroethane	<0.000	50.0	46.5	93	50.0	45.7	91	2	75-125	20	
1,1,2-Trichloroethane	<0.000	50.0	48.0	96	50.0	50.4	101	5	75-127	20	
Trichloroethene	<5.00	50.0	49.4	99	50.0	48.3	97	2	62-137	24	
Trichlorofluoromethane	<0.000	50.0	51.9	104	50.0	51.2	102	1	67-125	20	
1,2,3-Trichloropropane	<0.000	50.0	49.7	99	50.0	50.2	100	1	75-125	20	
1,2,4-Trimethylbenzene	<0.000	50.0	50.6	101	50.0	50.8	102	0	75-125	20	
1,3,5-Trimethylbenzene	<0.000	50.0	50.7	101	50.0	50.9	102	0	70-125	20	
o-Xylene	<5.00	50.0	51.6	103	50.0	51.4	103	0	75-125	20	
m,p-Xylenes	<10.0	100	99.2	99	100	101	101	2	75-125	20	
Vinyl Chloride	<2.00	50.0	41.9	84	50.0	42.1	84	0	75-125	20	

Matrix Spike Percent Recovery $[D] = 100 * (C - A) / B$
Relative Percent Difference $RPD = 200 * [(C - F) / (C + F)]$

Matrix Spike Duplicate Percent Recovery $[G] = 100 * (F - A) / E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit

LAB (LOCATION)

☒ XENCO ()
☐ CALSCIENCE ()
☐ TEST AMERICA ()
☐ SPL ()
☐ OTHER ()



Shell Oil Products Chain Of Custody Record

Please Check Appropriate Box:

☒ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL
☐ MOTIVA S&CM ☐ CONSULTANT ☐ LUBES
☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name:

Doug Welmer

INCIDENT # (ENV SERVICES)

9 7 0 9 4 9 8 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 3/1/2010

PO #

SAP #

PAGE: 1 of 4

CONSULTANT COMPANY:

Sovereign Consulting Inc.

ADDRESS:

3104 Unionville Road, Suite 150

CITY:

Cranberry Twp, PA 16066

TELEPHONE:

724-553-5084

FAX:

EMAIL:

gbsilic@sovcn.com

TURNAROUND TIME (CALENDAR DAYS):

☒ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

DELIVERABLES: ☒ LEVEL 1 ☐ LEVEL 2 ☐ LEVEL 3 ☐ LEVEL 4 ☐ OTHER (SPECIFY)

TEMPERATURE ON RECEIPT °C

Cooler #1 20°C

Cooler #2

Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:

☒ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ PROVIDE LEDD DISK

SITE ADDRESS (Street, City and State):

25 Pidge Avenue, Brooklyn NY

CONSULTANT PROJECT CONTACT (Report to):

Greg Bosiljic - 724-553-5084

CONSULTANT PROJECT NO:

EQ24

SAMPLER NAME(S) (Print):

Nick Zarcone - Longshore Environmental 631-472-1732

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	PRESERVATIVE					NO. OF CONT.	EPA 8260 (FULL LIST)	MTBE											Container PID Readings or Laboratory Notes
		DATE	TIME		HCL	HNO3	H2SO4	NONE	OTHER														
	MW-1	4/15/10	7:00	GW	X				Ice	3	X	X											
	MW-3	4/15/10	7:15	GW	X				Ice	3	X	X											
	MW-29	4/15/10	7:30	GW	X				Ice	3	X	X											
	MW-5	4/15/10	7:45	GW	X				Ice	3	X	X											
	MW-28	4/15/10	7:55	GW	X				Ice	3	X	X											
	MW-27	4/15/10	8:00	GW	X				Ice	3	X	X											
	MW-6	4/15/10	8:10	GW	X				Ice	3	X	X											
	MW-7R	4/15/10	8:20	GW	X				Ice	3	X	X											
	MW-8	4/15/10	8:30	GW	X				Ice	3	X	X											
	MW-9	4/15/10	8:40	GW	X				Ice	3	X	X											

Relinquished by: (Signature)

Received by: (Signature)

Date:

04/15/10

Time:

1100

Relinquished by: (Signature)

Received by: (Signature)

Date:

4/16/10

Time:

0900

03/2006 Revision

LAB (LOCATION)

☒ XENCO ()
☐ CALSCIENCE ()
☐ TEST AMERICA ()
☐ SPL ()
☐ OTHER ()



Shell Oil Products Chain Of Custody Record

Please Check Appropriate Box:

☒ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL
☐ MOTIVA SD&CM ☐ CONSULTANT ☐ LUBES
☐ SHELL PIPELINE ☐ OTHER ()

Print Bill To Contact Name:

Doug Weimer

INCIDENT # (ENV SERVICES)

9 7 0 9 4 9 8 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 3/1/2010

PAGE: 2 of 4

PO

SAP

1 0 0 6 2 3

CONSULTANT COMPANY:

Sovereign Consulting Inc.

ADDRESS:

3104 Unionville Road, Suite 150

CITY:

Cranberry Twp, PA 16066

TELEPHONE:

724-553-5084

FAX:

E-MAIL:

gbosiljic@sovcon.com

SITE ADDRESS (Street, City and State):

25 Paidge Avenue, Brooklyn NY

CONSULTANT PROJECT CONTACT (Report to):

Greg Bosiljic - 724-553-5084

CONSULTANT PROJECT NO.:

EQ24

SAMPLER NAME(S) (Print):

Nick Zarcone - Longshore Environmental 631-472-1732

LAB USE ONLY

369 409-H

TURNAROUND TIME (CALENDAR DAYS):

☒ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

DELIVERABLES: ☒ LEVEL 1 ☐ LEVEL 2 ☐ LEVEL 3 ☐ LEVEL 4 ☐ OTHER (SPECIFY) _____

TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES :

☒ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ PROVIDE LEDD DISK

REQUESTED ANALYSIS

EPA 8260 (FULL LIST)

Container PID Readings or Laboratory Notes

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	PRESERVATIVE					NO. OF CONT.	EPA 8260 (FULL LIST)	MTBE											
		DATE	TIME		HCL	HNO3	H2SO4	NONE	OTHER														
	MW-21R	4/15/10	8:50	GW	X				Ice	3	X	X											
	MW-22R	4/15/10	9:00	GW	X				Ice	3	X	X											
	MW-13	4/15/10	9:10	GW	X				Ice	3	X	X											
	MW-14	4/15/10	9:20	GW	X				Ice	3	X	X											
	MW-23	4/15/10	9:30	GW	X				Ice	3	X	X											
	MW-24	4/15/10	9:40	GW	X				Ice	3	X	X											
	MW-43	4/15/10	9:50	GW	X				Ice	3	X	X											
	MW-42	4/15/10	10:00	GW	X				Ice	3	X	X											
	MW-44	4/15/10	10:10	GW	X				Ice	3	X	X											
	MW-30	4/15/10	10:20	GW	X				Ice	3	X	X											

Relinquished by: (Signature)

Received by: (Signature)

Date:

04/15/10

Time:

1600

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:

Relinquished by: (Signature)

Received by: (Signature)

Date:

4/16/10

Time:

0900

05/2009 Revision

LAB (LOCATION)

- ☒ XENCO ()
☐ CALSCIENCE ()
☐ TEST AMERICA ()
☐ SPL ()
☐ OTHER ()



Shell Oil Products Chain Of Custody Record

Please Check Appropriate Box:

<input checked="" type="checkbox"/> ENV. SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input checked="" type="checkbox"/> MOTIVA SD&CM	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> LUBES
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: Doug Weimer

INCIDENT # (ENV SERVICES) 9 7 0 9 4 9 8 1

PO # SAP #

DATE: 3/1/2010

PAGE: 3 of 4

CONSULTANT COMPANY: Sovereign Consulting Inc.

ADDRESS: 3104 Unionville Road, Suite 150

CITY: Cranberry Twp, PA 16066

TELEPHONE: 724-553-5084 FAX: E-MAIL: gbosiljic@sovecon.com

TURNAROUND TIME (CALENDAR DAYS):
☒ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

DELIVERABLES: ☒ LEVEL 1 ☐ LEVEL 2 ☐ LEVEL 3 ☐ LEVEL 4 ☐ OTHER (SPECIFY) _____

TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SITE ADDRESS (Street, City and State): 25 Paidge Avenue, Brooklyn NY

CONSULTANT PROJECT CONTACT (Report to): Greg Bosiljic - 724-553-5084

CONSULTANT PROJECT NO.: EQ24

SAMPLER NAME(S) (Print): Nick Zarcone - Longshore Environmental 631-472-1732

LAB USE ONLY: 369409-H

SPECIAL INSTRUCTIONS OR NOTES:

☒ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ PROVIDE LEDD DISK

		REQUESTED ANALYSIS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
LAB USE ONLY	Field Sample Identification	SAMPLING	PRESERVATIVE	NO. OF CONT.	EPA 8260 (FULL LIST)	MTBE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date: 4/16/10	Time: 0900

05/2/06 Revision



☒ XENCO (_____)
☐ CALSCIENCE (_____)
☐ TEST AMERICA (_____)
☐ SPL (_____)
☐ OTHER (_____)

<input checked="" type="checkbox"/> ENV. SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA SD&CM	<input type="checkbox"/> CONSULTANT	<input type="checkbox"/> LUBES
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER _____	

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 3/1/2010

PAGE: 4 of 4

Sovereign Consulting Inc.

3104 Unionville Road, Suite 150

Cranberry Twp, PA 16066

724-553-5084

qbosilicic@soycon.com

☒ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

DELIVERABLES: ☒ LEVEL 1 ☐ LEVEL 2 ☐ LEVEL 3 ☐ LEVEL 4 ☐ OTHER (SPECIFY) _____

TEMPERATURE ON RECEIPT C°	Cooler #1	Cooler #2	Cooler #3
---------------------------	-----------	-----------	-----------

SPECIAL INSTRUCTIONS OR NOTES :

☒ SHELL CONTRACT RATE APPLIES

☐ STATE REIMBURSEMENT RATE APPLIES

☐ PROVIDE LEDD DISK

SITE ADDRESS (Street, City and State):

25 Paidge Avenue, Brooklyn NY

CONSULTANT PROJECT CONTACT (R000110)

CONSULTANT PROJECT NO:

Greg Bosiljic - 724-553-5084

EQ24

SAMPLER NAME(S) (Print):

Nick Zarcone - Longshore Environmental 631-472-1732

REQUESTED ANALYSIS

LAB USE ONLY

LAB USE ONLY
369409-4

EPA 8260 (FULL LIST)

MTBE

**Container PID Readings
or Laboratory Notes**

Page 129 of 130

Final Ver. 1.000

[illegible]

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:

Relinquished by: (Signature)

Received by: (Signature)

Date:

Time:

05/2/06 Revision



Prelogin / Nonconformance Report - Sample Log-In

Client:

Sovereign Consulting

Date/Time:

4-16-10

Lab ID #:

369409

Initials:

EM



Sample Receipt Checklist

1. Samples on ice?	Blue	Water	No	
2. Shipping container in good condition?	Yes	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	N/A	
4. Chain of Custody present?	Yes	No		
5. Sample instructions complete on chain of custody?	Yes	No		
6. Any missing / extra samples?	Yes	No		
7. Chain of custody signed when relinquished / received?	Yes	No		
8. Chain of custody agrees with sample label(s)?	Yes	No		
9. Container labels legible and intact?	Yes	No		
10. Sample matrix / properties agree with chain of custody?	Yes	No		
11. Samples in proper container / bottle?	Yes	No		
12. Samples properly preserved?	Yes	No	N/A	
13. Sample container intact?	Yes	No		
14. Sufficient sample amount for indicated test(s)?	Yes	No		
15. All samples received within sufficient hold time?	Yes	No		
16. Subcontract of sample(s)?	Yes	No	N/A	
17. VOC sample have zero head space?	Yes	No	N/A	
18. Cooler 1 No. 2581	Cooler 2 No.	Cooler 3 No.	Cooler 4 No.	Cooler 5 No.
37 lbs 20°C	lbs °C	lbs °C	lbs °C	lbs °C

Nonconformance Documentation

Contact: _____ Contacted by: _____ Date/Time: _____

Regarding: _____

Corrective Action Taken: _____

Check all that apply: ☐ Cooling process has begun shortly after sampling event and out of temperature condition acceptable by NELAC 5.5.8.3.1.a.1.
☐ Initial and Backup Temperature confirm out of temperature conditions
☐ Client understands and would like to proceed with analysis

APPENDIX B

Well Construction Logs



Sovereign Consulting, Inc.
290 Executive Drive, Suite 300
Cranberry Township, PA 16066

Log of Borehole: MW-21R

Project No.: EQ017

Project: Motiva Enterprise LLC - Brooklyn Terminal

Client: Shell Oil Products US

Location: 25 Paidge Ave, Brooklyn, NY

Project Manager: Doug Byers

SUBSURFACE PROFILE			SAMPLE				Well Construction Details
Depth	Symbol	Description	Lab Sample Interval	Sample Type	Recovery (ft/ft)	PID (ppm)	
0		Ground Surface					
0.0'-0.5'		Gravel (GP) Coarse Gravel (2" Road Base)					
0.5'-5.0'		Fill Material Fine to medium sand with fill material (wood and bricks), little silt, reddish brown to dark gray, moist to wet at 4.0'	NA	Soft Dig	NA	0.0	
5.0'-13.0'		No Recovery <u>Drill Cuttings:</u> Clay with little gravel, dark gray, wet	NA	DT	0.0/5.0	NA	
13.0'-13.0'			NA	DT	0.0/3.0	110	
13.0'-13.0'			NA	DT	0.0/3.0	110	
14		End of Boring					<p>HSA (6.25"ID) to 13.0'</p> <p>DT= Dual Tube (3.25"OD)</p>
16							
18							
20							

Drilled By: Longshore Environmental Inc

Drill Method: Direct Push/ HSA - 6.25" ID

Drill Date: 2/23/10

Geologist: Paul R Yesconis

Hole Size: ~10"

Static Groundwater:

Sheet: 1 of 1



**SOVEREIGN
CONSULTING**

Sovereign Consulting, Inc.
290 Executive Drive, Suite 300
Cranberry Township, PA 16066

Log of Borehole: MW-22R

Project No.: EQ017

Project: Motiva Enterprise LLC - Brooklyn Terminal

Client: Shell Oil Products US

Location: 25 Paidge Ave, Brooklyn, NY

Project Manager: Doug Byers

SUBSURFACE PROFILE			SAMPLE				Well Construction Details
Depth	Symbol	Description	Lab Sample Interval	Sample Type	Recovery (ft/ft)	PID (ppm)	
0		Ground Surface					
0.0'-0.5'		Gravel (GP) Coarse Gravel (2" Road Base)					
0.5'-5.0'		Gravelly Sand (SP) Fine to medium sand with fine to coarse gravel (sub-angular), little silt, dark grayish brown, wet at 4.5'	NA	Soft Dig	NA	0.0	
5.0'-9.0'		Sandy Gravel (GP) Medium gravel (sub-rounded) with fine to coarse sand, dark grayish brown, wet	NA	DT	1.0/4.0	600	
9.0'		DT and HSA Refusal at 9.0'					DT= Dual Tube (3.25"OD) HSA to 9.0'
End of Boring							
10'							
12'							
14'							
16'							

Drilled By: Longshore Environmental Inc

Drill Method: Direct Push/ HSA - 6.25" ID

Drill Date: 2/24/10

Geologist: Paul R Yesconis

Hole Size: ~10"

Static Groundwater:

Sheet: 1 of 1



**SOVEREIGN
CONSULTING**

Sovereign Consulting, Inc.
290 Executive Drive, Suite 300
Cranberry Township, PA 16066

Log of Borehole: MW-42

Project No.: EQ017

Project: Motiva Enterprise LLC - Brooklyn Terminal

Client: Shell Oil Products US

Location: 25 Paidge Ave, Brooklyn, NY

Project Manager: Doug Byers

SUBSURFACE PROFILE			SAMPLE				Well Construction Details
Depth	Symbol	Description	Lab Sample Interval	Sample Type	Recovery (ft/ft)	PID (ppm)	
0		Ground Surface					
0.0'-0.5'		Asphalt					
0.5'-5.0'		Fill Material Brick, reddish orange, no odors	NA	Soft Dig	NA	0.0	
5.0'-5.5'		Sand (SW) Fine to coarse sand with medium gravel and brick fragments, dark grayish brown, wet	NA	DT	2.5/5.0	0.0	
5.5'-10.0'		Silty Sand (SM) Fine sand and silt, light grayish brown, very moist to wet	NA	DT	3.0/3.0	0.0	
10.0'-12.4'		Organic Clay (OH) Marine Clay, high plasticity, light gray, wet	NA	DT		0.0	
12.4'-13.0'		Organic Clay (OH) Marine Clay with root material, high plasticity, light gray, wet				0.0	
13.0'		End of Boring					
14							
16							
18							
20							
Drilled By: Longshore Environmental Inc Drill Method: Direct Push/ HSA - 6.25" ID Drill Date: 2/24/10 Geologist: Paul R Yesconis							Hole Size: ~10" Static Groundwater: Sheet: 1 of 1



Sovereign Consulting, Inc.
290 Executive Drive, Suite 300
Cranberry Township, PA 16066

Log of Borehole: MW-43

Project No.: EQ017

Project: Motiva Enterprise LLC - Brooklyn Terminal

Client: Shell Oil Products US

Location: 25 Paidge Ave, Brooklyn, NY

Project Manager: Doug Byers

SUBSURFACE PROFILE			SAMPLE				Well Construction Details
Depth	Symbol	Description	Lab Sample Interval	Sample Type	Recovery (ft/ft)	PID (ppm)	
0		Ground Surface					
0.0'-0.5'		Asphalt					
0.5'-1.0'		Gravel (GP) Coarse Gravel (2" Road Base)					
1.0'-5.0'		Fill Material Fine to medium brown sand with reddish orange brick, some fine to coarse gravel, moist to wet at 4'	NA	Soft Dig	NA	0.0	
5.0'-10.0'		Silt (ML) Silt, light gray, stiff, non plastic, moist	NA	DT	0.8/5.0	0.0	
10.0'-10.8'		Silty Clay (ML-CL) Clay with silt, brownish gray, low plasticity saturated	NA	DT	3.0/3.0	0.0	
10.8'-13.0'		Organic Clay (OH) Marine Clay with organic material (roots) and mussel shells, high plasticity, light gray, wet				0.0	
13.0'		End of Boring					
14							
16							
18							
20							
Drilled By: Longshore Environmental Inc Drill Method: Direct Push/ HSA - 6.25" ID Drill Date: 2/24/10 Geologist: Paul R Yesconis			Hole Size: ~10" Static Groundwater: Sheet: 1 of 1				



Sovereign Consulting, Inc.
290 Executive Drive, Suite 300
Cranberry Township, PA 16066

Log of Borehole: MW-44

Project No.: EQ017

Project: Motiva Enterprise LLC - Brooklyn Terminal

Client: Shell Oil Products US

Location: 25 Paidge Ave, Brooklyn, NY

Project Manager: Doug Byers

SUBSURFACE PROFILE			SAMPLE				Well Construction Details
Depth	Symbol	Description	Lab Sample Interval	Sample Type	Recovery (ft/ft)	PID (ppm)	
0		Ground Surface					
0.0'-0.8'		Asphalt					
0.8'-5.0'		Fill Material Reddish-orange brick with concrete at 4.5'-5.0'	NA	Soft Dig	NA	0.0	
5.0'-6.2'		Silty Clay (ML-CL) Clay with silt, dark gray, stiff, slightly plastic, wet				0.0	
6.2'-10.0'		Sandy Silt (ML) Silt with fine sand, dark gray, non plastic, medium to stiff, wet	NA	DT	3.2/5.0	0.0	
10.0'-13.0'		Organic Clay (OH) Marine Clay with organic material (roots) and mussel shells, high plasticity, light gray, wet	NA	DT	3.0/3.0	0.0	
13.0'		End of Boring				0.0	
14							
16							
18							
20							
Drilled By: Longshore Environmental Inc Drill Method: Direct Push/ HSA - 6.25" ID Drill Date: 2/25/10 Geologist: Paul R Yesconis							Hole Size: ~10" Static Groundwater: Sheet: 1 of 1



Sovereign Consulting, Inc.
290 Executive Drive, Suite 300
Cranberry Township, PA 16066

Log of Borehole: MW-7R

Project No.: EQ017

Project: Motiva Enterprise LLC - Brooklyn Terminal

Client: Shell Oil Products US

Location: 25 Paidge Ave, Brooklyn, NY

Project Manager: Doug Byers

SUBSURFACE PROFILE			SAMPLE				Well Construction Details
Depth	Symbol	Description	Lab Sample Interval	Sample Type	Recovery (ft/ft)	PID (ppm)	
0		Ground Surface					
0.0'-0.5'		Gravel (GP) Coarse Gravel (2" Road Base)	NA	Soft Dig	NA	0.0	
0.5'-1.5'		Sand (SP) Fine to medium sand, brown, moist					
1.5'-5.0'		Sand (SP) Fine to medium sand with fill material, dark gray, wet at 4.5'					
5.0'-7.7'		Clayey Gravel (GC) Fine to medium gravel with clay, dark grayish brown, wet, hydrocarbon odor	NA	DT	1.5/5.0	450	
7.7'-10.0'		Silty Gravel (GM) Fine to medium gravel (sub-angular) with silt, little fine to coarse sand, dark gray to black staining, hydrocarbon odor, wet				500	
10.0'-13.0'		No Recovery Drill Cuttings: Clay, very soft, high plasticity, dark gray to black, wet, hydrocarbon odors	NA	DT	0.0/3.0	500	
13.0'		End of Boring				NA	HSA to 13.0' DT= Dual Tube (3.25"OD)
14							
16							
18							
20							

Drilled By: Longshore Environmental Inc

Drill Method: Direct Push/ HSA - 6.25" ID

Drill Date: 2/23/10

Geologist: Paul R Yesconis

Hole Size: ~10"

Static Groundwater:

Sheet: 1 of 1

APPENDIX C

Waste Disposal Documentation

Lorco Petroleum Services
450 South Front St.
Elizabeth, NJ 07202
(908) 820-8800
(800) 734-0910
FAX: (908) 820-8412



www.lorcopetroleum.com

STANDARD
COLLECTION
ORDER FORM

748118

GENERATOR/LOCATION

SALES ORDER #

3192591

BILL TO (IF DIFFERENT FROM LOCATION)

NAME

INFORMATION/ATTENTION LINE

DELIVERY ADDRESS

CITY

STATE

ZIP

PHONE NUMBER

PURCHASE ORDER NUMBER

TIME IN

TIME OUT

NAME

INFORMATION/ATTENTION LINE

DELIVERY ADDRESS

CITY

STATE

ZIP

PHONE NUMBER

PURCHASE ORDER NUMBER

MANIFEST
NUMBER

6027475

SHIPPING INFORMATION

This is to certify that the below named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation

NO.	TYPE	QTY.	UNIT	US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	SALES REPRESENTATIVE
-----	------	------	------	---	----------------------

SERVICE SECTION

SALES CODE	DESCRIPTION	WASTE CODE	QUANTITY	UNIT PRICE	PRICE	TAX	LINE TOTAL
40500	USED OIL REMOVAL						
40300	ANTI-FREEZE REMOVAL						
40400	OILY WATER DISPOSAL						
41100	SLUDGE DISPOSAL						
41000	GASOLINE/WATER		60	Gallons			
40900	DRUM DISPOSAL						
41507	TANK ENTRY						
40611	NEW 55 GAL DRUM / 17H						
42001	DEXSIL TEST KIT						
41508	TRANSPORTATION						
41508	TRUCK AND OPERATOR						

PARTS WASHER SERVICE INTERVAL _____ DAYS.

USED OIL CUSTOMER SERVICED EVERY 30 DAYS
UNLESS OTHERWISE INDICATED.

USED OIL SERVICE INTERVAL _____ DAYS.

GENERATOR WARRANTS AND REPRESENTS THAT THE MATERIALS PROVIDED LORCO HEREUNDER HAVE NOT BEEN MIXED, COMBINED, OR OTHERWISE BLENDED IN ANY QUANTITY WITH MATERIALS CONTAINING POLYCHLORINATED BIPHENYLS (PCB) OR ANY OTHER MATERIAL DEFINED AS HAZARDOUS WASTE UNDER APPLICABLE LAWS, INCLUDING BUT NOT LIMITED TO 40 CFR PART 261, GENERATOR AGREES TO INDEMNIFY AND HOLD LORCO HARMLESS FOR ANY DAMAGES, COSTS, ATTORNEY'S FEES, ETC. ARISING OUT OF OR IN ANY WAY RELATED TO A BREACH OF THE ABOVE WARRANTY BY THE GENERATOR.

Generator certifies that the waste is ☐ used oil ☐ used antifreeze ☐ oily water ☐ oil filter ☐ parts washer solvent

☐ Other _____

Description

In accordance with the N.J.A.C. 7:26-12.1 et seq, LORCO has the required permits to accept the above described waste.

X

Print Name

Title

X

Signature

Date

GENERATOR/CUSTOMER

CONDITIONALLY
EXEMPT SMALL
QUANTITY
GENERATOR
CERTIFICATION

I certify that this generator generates less than 100 kilograms of hazardous waste per month, as defined at 40 C.F.R. 261, and does not accumulate more than 1,000 kilograms of such waste during the month.

X

GENERATOR'S SIGNATURE

NON CONDITIONALLY
EXEMPT LARGE
QUANTITY
GENERATOR
CERTIFICATION

DEXSIL CDT
TEST RESULTS

X

PPM

TOTAL

CHARGE MY ACCOUNT FOR THIS TRANSACTION UNLESS OTHERWISE INDICATED IN THE PAYMENT SECTION.

\$

INVOICES REFLECTING CHARGES TO CUSTOMER ARE SUBJECT TO AN INTEREST RATE OF THE LESSER OF 1 1/2% PER MONTH (18% PER ANNUM) OR THE MAXIMUM RATE ALLOWED BY LAW ON ANY INVOICES THAT ARE NOT PAID WITHIN 30 DAYS. IN THE EVENT OF DEFAULT, LORCO SHALL BE ENTITLED TO RECOVER COSTS OF COLLECTION, INCLUDING REASONABLE ATTORNEY'S FEES. INITIAL _____

PAYMENT RECEIVED SECTION

CASH ☐

TOTAL RECEIVED

CHECK NUMBER

In accordance with NJAC7:26-6.7b + 40CFR PART 279 LORCO has notified the US EPA of its location and used oil management activities.

X

Print Name

X

Signature

2.4.10

Date

LORCO REPRESENTATIVE

Shell/Motiva 0009185



450 South Front St.
Elizabeth, NJ 07202
(908) 820-8800
Fax: (908) 820-8412

INVOICE

0748118-IN

SALESPERSON	DATE OF INVOICE
ARD	02/04/10
JOB SITE	

RECEIVED

SOVEREIGN CONSULTANTS
4 TERRI LANE
SUITE 500
Burlington NJ 08018

FEB 18 2010

SHELL 58603
25 PAIDGE AVE
BROOKLYN NY

ACCOUNT NO.	DATE SHIPPED	TERMS	YOUR ORDER NUMBER
0032396		MANIF #27445	58603

QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT
60.00	GASOLINE & WATER - VAC TR NY		19.20
	FUEL SURCHARGE		15.00
4.00	TRANSPORTATION - VAC TR NY		340.00
	SAP#58603 RIPR#82042		
	EQ Condition		
	A B C D E F		
	NET INVOICE:		374.20
	SALES TAX:		31.34
	TOTAL		405.54

LOG #	PO #	320
AMOUNTS	405.54	PSC SUB 60
PRJ-APP-T#	EQ 017	- 311 - 16
PM APP:	DSB	INV COMMENT
TRANS #	DE	EL
	EB	

Disposal fee
for waste from AST
prior to removal

A SERVICE CHARGE OF 1.5%
WILL BE ADDED TO ALL PAST
DUE BALANCES.

Thank You!

☆ RETURN YELLOW COPY
WITH PAYMENT ☆

LORCO
PETROLEUM SERVICES

SON

Shipper No. 0027445

Carrier No. _____

Date 2-4-80

(Name of Carrier)

TO: Consignee	LORCO PETROLEUM SERVICES	FROM: Shipper	Shell 58603
Street	450 SOUTH FRONT STREET	Street	25 PAIDGE AVE
Destination	ELIZABETH, NEW JERSEY 07202	Origin	Brooklyn NY
Route	FEDERAL TERMINAL	Emergency Response Phone No.	908-820-8800
		Vehicle Number	

[illegible]

When transporting hazardous materials include the technical or chemical name for n.o.s. (not otherwise specified) or generic description of material with appropriate UN or NA number as defined in US DOT Emergency Communication Standard (HIN-126). Provide emergency response phone number in case of incident or accident in box above.

REMIT C.O.D. TO: ADDRESS:		COD Amt \$		C.O.D. FEE: PREPAID <input type="checkbox"/> \$ COLLECT <input type="checkbox"/> \$	
NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding		This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.		Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.	
\$ _____ per _____		_____ Signature _____ (Signature of Consignor)		TOTAL CHARGES: \$ _____ FREIGHT CHARGES: _____ FREIGHT PREPAID except when box at right is checked <input type="checkbox"/> are to be collected <input type="checkbox"/>	

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination if on its route, otherwise to deliver to another carrier on the route to said destination.--It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms

and conditions in the governing classification on the date of shipment

Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in governing classification and the said terms and conditions are hereby agreed to by the shipper, and accepted for himself and his assigns.

NOTICE: Freight moving under this Bill of Lading is subject to the classifications and lawful rate tariffs in effect on the date of this Bill of Lading. This notice supersedes and negates any claims, alleged or asserted oral or written contract, promise, representation or understanding between the parties with respect to this freight, except to the extent of any written contract which establishes lawful contract carriage and is signed by authorized representatives of both parties to the contract.

SHIPPER: **ON BEHALF OF MOTIVA ENTERPRISES, LLC** CARRIER: **LORCO PETROLEUM SERVICES**
PER: *[Signature]* PER: **Driver Sign x** *[Signature]*
DATE: **Date of Shipment:** *2-4-10*

MANIFEST DOCUMENT# 6027445

*HAZARDOUS MATERIALS MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS REFERENCED IN 49CFR § 172.20

Shell Pipeline Company LP
Residual Information Pick-Up Request (RIPR)

RDC: ROBERT BILLECK

RIPR Date 01/20/2010

RIPR # 82042

Engineer: WEIMER, DOUG

Phone / Fax: 703/259-2019 / 703/259-2068

Facility / SAP Cost Center: 58603

Region/Dist/Area: MOTIVA - DIST. - NEW

Address: 25 PAIDGE AVENUE

County: KINGS

ENGLAND

BROOKLYN, NY 11222

Remediation: YES SAP Cost Element: 276501

Incident #: 97094981

Scad Copies: Reimb. Invoice NO

Direct Pay: NO

Other Info:

Company:

Contact:

Consultant / Contractor Information

Company: SOVEREIGN CONSULTING, INC.

Contact: MEHLER, LINDA

Address: 6 TERRI LANE

BURLINGTON, NJ 08016

Type of Facility: OTHER MOTIVA TERMINAL

Phone / Fax: 609/3261500 / 609/3261501

Material Description

Free Liquids: YES

GASOLINE & WATER

Process Generating this Residual

CLEANING OF ONSITE AST TO BE REMOVED FROM THE SITE.

Accumulation Date: 02/01/2010 Sampling Date (if applicable):

Container Information:

Drums: Quantity / Type:

Id #:

Bins: Quantity / Size:

Supplied by:

Bulk Pile: Indicator / Size: NO

Other Containers: AST

Volume: 200

Container Description: AST

Contents/Prev. Contents:

Requirements or conditions associated with pick-up:Comments or suggestions for local vendor:Form Filled Out by:

Name: MEHLER, LINDA

Date: 01/20/2010

Email: LMEHLER@SOVCON.COM

Phone / Fax: 609/3261500 / 609/3261501

http://rpmp.shellpipeline.com/epoch/ripr/Temp/RIPRFORM_82042_LMEHLER.htm

1/20/2010



Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number: 1Z97A7X70193169772
Reference Number(s): EQ017-711-16, ANNUAL SAMPLING REPORT
Service: NEXT DAY AIR
Weight: 4.00 Lbs
Shipped/Billed On: 06/30/2010
Delivered On: 07/01/2010 10:30 A.M.
Delivered To: 4740 21ST ST
LONG ISLAND CITY, NY, US 11101
Signed By: BISSESSAR

Location: RECEIVER

Thank you for giving us this opportunity to serve you.

Sincerely,

UPS

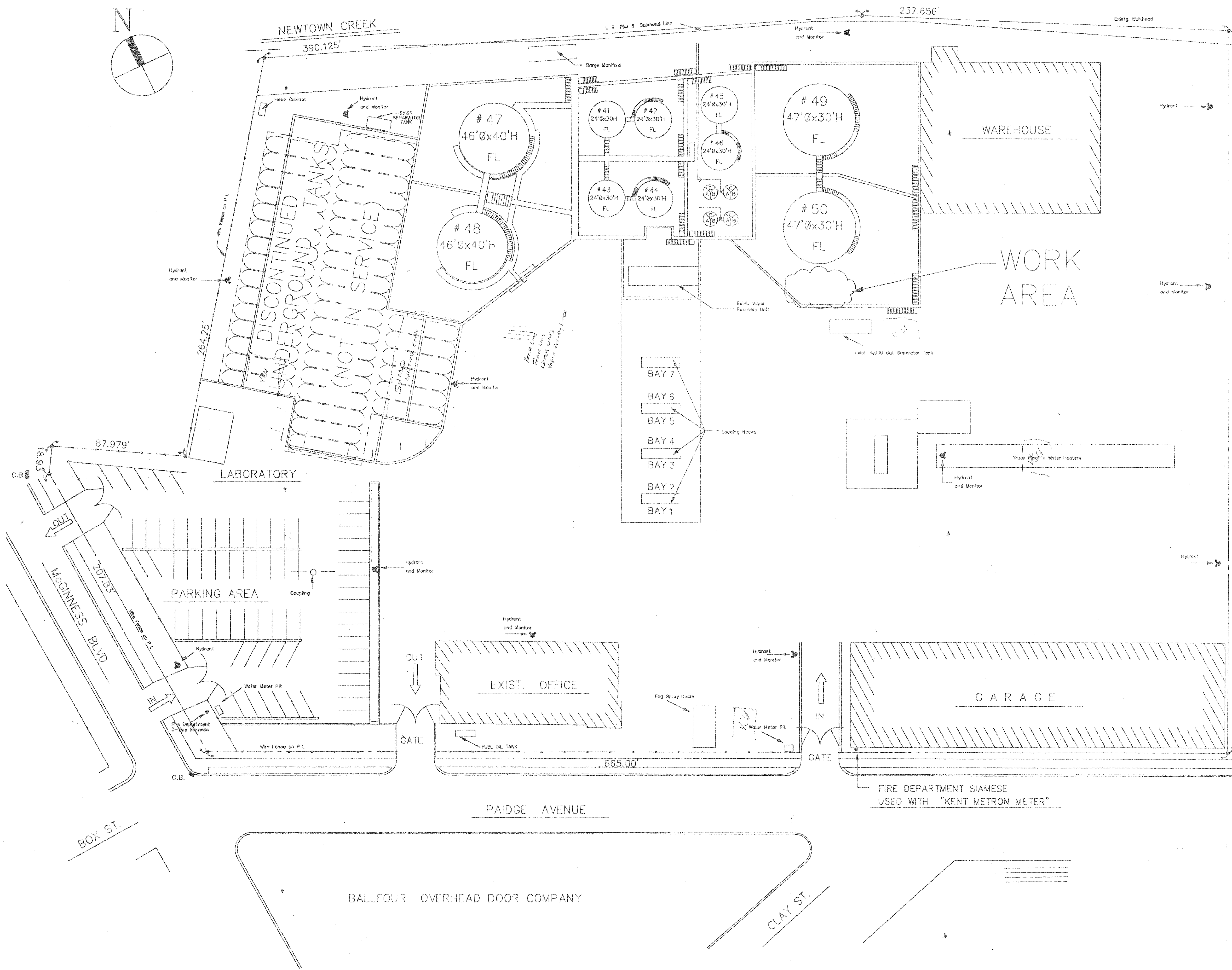
Tracking results provided by UPS: 07/01/2010 10:59 A.M. ET

DOCUMENT INFO

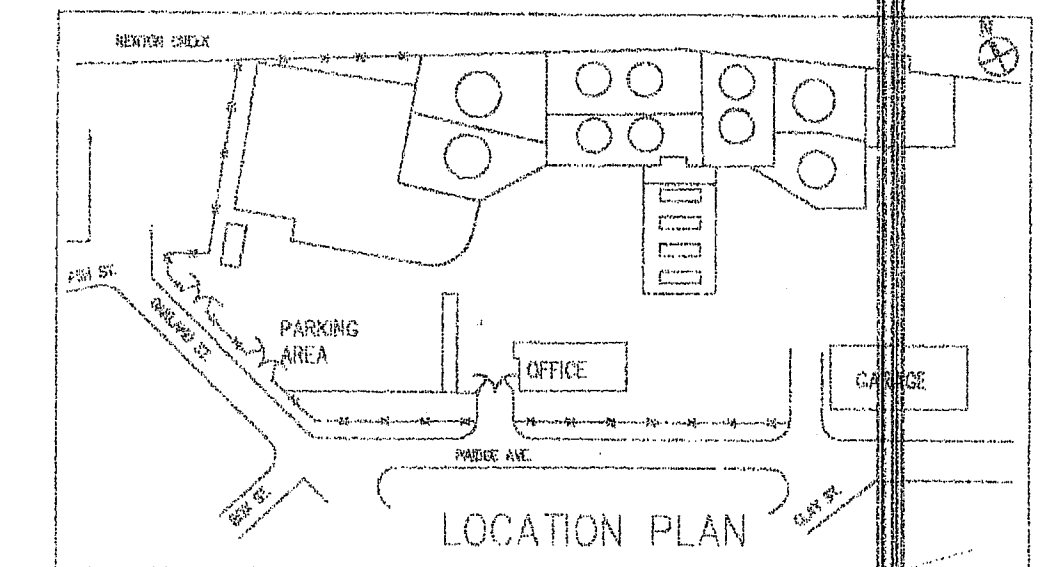
28

DocID: 00000097

Filename: 58603-1991-12-03-FIG-01 (New Above
Ground 6000 Gal Steel Tank Plot Plan -
Gorman).pdf



WILLIAMSBURG STEEL COMP.
 MAIN WAREHOUSE BLDG.
 NORMAL USE



BLOCK: 2480
 LOT: 1
 ZONE: M3-1



REV.	DATE	BY	DESCRIPTION				ISSUED TO		
SHELL OIL COMPANY									
LOCATION: 25 PAIDGE AVENUE, BROOKLYN, N.Y.									
WALTER T. GORMAN, P.E., P.C.									
115-14 BEACH CHANNEL DRIVE									
ROCKAWAY PARK, NY 11694									
PHONE No.: 718-474-3400									
SCALE: 1"=30'-0"			DWG.			DATE: 12--03--81/LO			
DRAWN BY: J.K.			W-1			JOB No.: K-138/AF			
CHECKED BY: LO			AF			APPL. No.:			
FILE No.: -			XPRIL SHEET 1 OF 3			CAD No.: JK072/MI			
NEW ABOVE GROUND 6000 GAL. STEEL TANK									
PLOT PLAN									

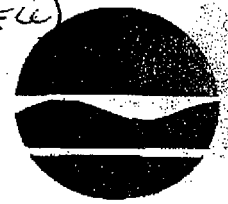
DOCUMENT INFO

28

DocID: 00000230

Filename: 58603-1999-11-03-PER-01 (Faxed MOSF
License 02154011 - NYSDEC).pdf

FILE: BROOKLYN IER
(SHELL)



facsimile
TRANSMITTAL

John P. Cahill
Commissioner

To: Doug Lessing

Fax: (732)536-4659

Pages: 21 Pages, Plus this cover page.

Date: November 3, 1999

RE: Motiva's Greenpoint MOSF License

Doug,

Sorry for the delay in sending the MOSF license. Thanks for the reminder. I think the problem was that the Post Office did not recognize Motiva as Shell Oil. Please find your copy of the MOSF. If you have any question, please call me at (718)482-4933 ext. 7110.

Sincerely,

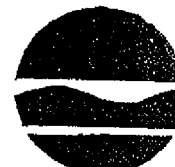
Anthony Sigona, P.E.

From the desk of...

Anthony J. Sigona, P.E.
Environmental Engineer II
NYSDEC
30-20 Thomson Avenue
3rd Floor
Long Island City, New York 11101
(718) 482-4933 ext. 7110

Shell/Motiva 0009193

11/09/98 MON 10:00 FAX
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 2
47-40 21st Street, Long Island City, NY 11101-5407
Phone: (718) 482-4933 ext. 7100 FAX: (718) 482-4954



John P. Cahill
Commissioner

March 31, 1999

Certified Mail - Return Receipt Requested

Motiva Enterprises
25 Paidge Avenue
Brooklyn, N.Y. 11222

ATT: Mr. M.A. D'Antonio, Facility Manager

Dear Mr. D'Antonio:

Enclosed herewith is your Major Petroleum Facility License #02-1540, which expires March 31, 2004. You must apply for renewal 90 days before that date. You must comply with any new or modified conditions imposed by this license. You must comply with all guidelines to prevent, contain, cleanup and remove discharges of petroleum to surface and groundwater. Scheduled facility inspections will be made by Department representatives annually, as well as at random times during the term of the license. Information regarding license fees will be sent by the Division of Fiscal Management, Oil Spill Revenue Unit.

The Department bases the issuance of this license on: (1) an evaluation of the information contained in your application, (2) on-site facility inspections and (3):

- X evaluation of submitted State and Federal plans to prevent, control, contain and remove discharges OR
- a schedule for when such plans are to be submitted.

Motiva Enterprises

- 2 -

March 31, 1999

The Department hereby certifies that this major facility currently:

 X

has implemented or is in the process of implementing State and Federal plans and regulations for the prevention, control, containment and removal of discharges.

 X

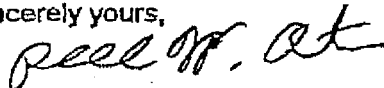
has implemented or is in the process of implementing the requirements of 6 NYCRR Sections 613.2 through 613.9 and 614.2 through 614.14

Included in your license are general, standard and special Conditions as deemed necessary to protect the waters of the State based upon evaluation of State and Federal plans, compliance with 6 NYCRR Parts 613 and 614, environmental setting and/or facility inspections.

Future license renewals will be based on, among other factors, the history of spills and discharges at the major onshore facility, the history of compliance with the applicable provisions of 6 NYCRR Parts 613 and 614, a review of submitted plans and inspections of the major onshore facility, compliance with license conditions and additional guidelines as subsequently issued.

Please post this license conspicuously at the facility for which it is issued.

Sincerely yours,



Randall W. Austin
Regional Spill Engineer
Spill Prevention & Response Programs

cc: Anthony J. Sigona, P.E.
MOSF File

Shell/Motiva 0009195



New York State
Department of Environmental Conservation
MAJOR PETROLEUM FACILITY LICENSE



FACILITY:

OWNER:

MOTIVA ENTERPRISES, LLC
25 PAIDGE AVENUE
BROOKLYN, NY 11222

MOTIVA ENTERPRISES, LLC
1100 LOUISIANA STREET
HOUSTON, TX 77002

The facility named above has been duly licensed, pursuant to Article 12 of the Navigation Law. Any conditions placed on this license are marked on the attached Special Conditions Check List.

MAILING CORRESPONDENCE:

LICENSE NUMBER: 2-1540

DATE ISSUED: APRIL 1, 1999

EXPIRATION DATE: MARCH 31, 2004

ATTN: M.A. D'ANTONIO/DAVID BIER
MOTIVA ENTERPRISES, LLC
25 PAIDGE AVENUE
BROOKLYN, NY 11222

Commissioner of Environmental Conservation

By *[Signature]*Title Regional Spill Engineer**THIS LICENSE IS NON-TRANSFERABLE**



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

MAJOR PETROLEUM FACILITY LICENSE

 Tank Listing For License Number: 2-1540

 Page 1 of 1

TANK NUMBER.	DATE INSTALLED (Month/Year)	TANK LOCATION	TANK TYPE	CAPACITY (Gallons)	PRODUCT STORED
41	01/48	Aboveground	Steel/Carbon Steel	88,200	Unleaded Gasoline
42	01/48	Aboveground	Steel/Carbon Steel	88,200	Unleaded Gasoline
43	01/50	Aboveground	Steel/Carbon Steel	88,200	Unleaded Gasoline
44	01/50	Aboveground	Steel/Carbon Steel	88,200	Unleaded Gasoline
45	01/50	Aboveground	Steel/Carbon Steel	88,200	Unleaded Gasoline
46	01/50	Aboveground	Steel/Carbon Steel	88,200	Unleaded Gasoline
47	01/48	Aboveground	Steel/Carbon Steel	407,400	Unleaded Gasoline
48	01/48	Aboveground	Steel/Carbon Steel	407,400	Unleaded Gasoline
49	01/48	Aboveground	Steel/Carbon Steel	445,200	Unleaded Gasoline
50	12/48	Aboveground	Steel/Carbon Steel	445,200	Unleaded Gasoline
55	02/99	Aboveground on rack	Steel/Carbon Steel	10,000	Diesel

GENERAL CONDITIONS FOR MAJOR PETROLEUM FACILITY LICENSE

1. No chemical dispersants may be employed in the clean-up of a spill or discharge without approval. If a Spill Prevention and Containment Plan or spill clean-up plan contains a list of chemical or biological agents that are to be used in clean-up operations, the use of such chemicals is subject to prior approval from the Department.
2. The use of sorbents shall be limited to the cleanup of small spills and the final cleanup of large spills.
3. Disposal of all recovered petroleum products and oil-soaked debris shall be in accordance with 6 NYCRR Section 611.6.
4. The owner or operator shall maintain all equipment, including spill clean-up equipment, in good repair.
5. Major additions, changes or rehabilitation in the structures or equipment of the onshore major facility, which would materially affect the potential for a petroleum discharge must be approved in advance by the Department. Any amendments or changes to any plans submitted with or referred to in the license application shall be promptly furnished to the Regional Offices.
6. The Department shall be notified of all leaks or spills immediately, but in no case later than 2 hours after the spill. Notification must be made by calling the DEC Spill Hotline at (800) or (518) 457-7362.
7. Any person transporting and/or disposing of recovered oil and/or oily debris must be registered by the Department, as a "REGISTERED WASTE HAULER" pursuant to 6 NYCRR Part 364 and must transport the material to a disposal facility shown on the Part 364 registration.
8. License fees must be paid by the licensee as required by 17 NYCRR Section 30.9, "Oil Spill Prevention and Control, Licensing of Major Facilities".
9. The owner or operator of the facility shall provide access to the facility to representatives of the Department during normal business hours for the purpose of determining compliance with State and federal regulations and all general, standard and special conditions of this license.

MOSF-LP-3

10. Department Initiated Modifications, Suspensions or Revocations and Licensee Initiated Modifications:

Department Initiated Modifications, Suspensions or Revocations

- (a) The Department may modify, suspend or revoke this license at any time based on the grounds including, but not limited to, the following:
 - (1) materially false or inaccurate statements in the license application or supporting documentation;
 - (2) failure by the license to comply with any terms or conditions of the license;
 - (3) exceeding the scope of the project as described in the license application;
 - (4) failure to pay monthly license fees and/or submit monthly license reports;
 - (5) newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing license; or
 - (6) noncompliance with previously issued license conditions, orders of the Commissioner, any provision of the Navigation Law or Environmental Conservation Law or the regulations adopted pursuant to such laws related to the licensed activity.
- (b) The Department shall send a notice of intent to modify, suspend or revoke a license too the licensee by mail or personal service. The notice shall state the alleged facts or conduct which appear to warrant the intended action.
- (c) Within 15 days of the date of such notice of intent, the licensee may submit a written statement to the Department, giving reasons why the permit should not be denied, suspended or revoked, or requesting a hearing, or both. Failure by the licensee to submit a timely statement shall result in the Department's action becoming effective on the date specified in the notice of intent.
- (d) Within 30 days of receipt of the licensee's statement, the Department shall either:
 - (1) if a statement without a request for a hearing is submitted, rescind or confirm the notice of intent based on a review of the information provided by the license; or
 - (2) if a statement with a request for a hearing has been submitted, notify the license of a date and place for a hearing, to be commenced not later than 60 days from this notification.

MOSF-LP-4

- (e) In the event such a hearing is held, the Commissioner shall, within 30 days of receipt of the complete record, issue a decision which:
- (1) continues the license in effect as originally issued;
 - (2) modifies the license, or suspends it for a stated period of time or upon stated conditions; or
 - (3) revokes the license, including where order by the Commissioner, removal or modification of all or any portion of a project, whether completed or not.

Notice of the decisions, stating the findings and reasons therefore, shall be mailed to the licensee.

- (f) Where the Department proposed to modify a license and the licensee requests a hearing on the proposed modification, the original license conditions remain in effect until there has been a decision issued by the Commissioner as provided herein. At such time the modified license conditions will take effect.
- (g) Nothing in these license conditions shall preclude or affect the Commissioner's authority to issue summary abatement orders under ECL 71-0301 or take emergency action summarily suspending a license under section 401(3) of the State Administrative Procedure Act.

License Initiated Modification

Applications for modification of a license must include a statement of necessity or reasons for the modification, as well as a description of the requested modification. The Department shall notify the licensee of its decision, by mail, within fifteen days of receipt of such application. An application for modification may be denied for failure to meet any of the standards or criteria applicable under the Navigation Law and regulations adopted thereunder, Article 8 of the Environmental Conservation Law or for any of the reasons set forth in paragraphs (a) (1) - (6) above.

The Department may determine that an application for modification shall be treated as a new application for a license if:

- (1) the application represents a material change in existing license conditions or in the scope of permitted activities; or
- (2) there is newly discovered material information or there has been a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing license;

Until the Department grants a request for modification requested by a licensee, the original license conditions remain in effect.

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MAJOR OIL STORAGE FACILITY LICENSE SPECIAL CONDITIONS CHECK-LIST

Instructions: If an "X" appears in the column labeled "Condition", the specified condition applies to the license issued to the facility. The details of each condition and compliance dates are included in the section titled, "Special Conditions for Major Oil Storage Facilities".

<u>Condition</u>	<u>Section Compliance Number</u>	<u>Date</u>	<u>Section Title</u>
			<u>Installing Monitoring Wells</u>
_____	1(a)	_____	Initial Installation of Monitoring Wells
_____	1(b)	_____	Additional Monitoring Wells
			<u>Sampling and Testing of Monitoring Wells</u>
_____	2(a)	_____	Initial Testing of Monitoring Wells
_____	2(b)	_____	Six Month Testing of Monitoring Wells
<u>X</u>	2(c)	<u>June 30</u>	Yearly Testing of Monitoring Wells
<u>X</u>	2(d)	<u>Monthly</u>	Monthly Monitoring of Wells
			<u>Spill Prevention and Containment Plan</u>
_____	3(a)	_____	P.E. Certification/Management Review of Plan
_____	3(b)	_____	Description of Secondary Containment System
_____	3(c)	_____	Testing of Secondary Containment System
_____	3(d)	_____	Engineering Plan for Upgrading Secondary Containment System
_____	3(e)	_____	Implementation of Engineering Plan
_____	3(f)	_____	Site Map
_____	3(g)	_____	Description of Previous Spills
_____	3(h)	_____	Compliance Report
_____	3(i)	_____	Updated SPCC Plan and Facility Response Plan
<u>X</u>	3(j)	<u>8-31-01</u>	Inspection Certification of Secondary Containment Systems

* This is not a requirement for underground storage systems and NYC mounded tanks. It is only applicable to aboveground, free standing, tanks with a capacity in excess of 10,000 gallons or where otherwise required due to proximity to surface water.

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**MAJOR OIL STORAGE FACILITY LICENSE
SPECIAL CONDITIONS CHECK-LIST**

(Continued)

MTBE Monitoring

<u> </u>	4(a)	<u> </u>	Initial Testing of Monitoring Wells
<u> </u>	4(b)	<u> </u>	Six Month Testing of Monitoring Wells
<u> X </u>	4(c)	<u>June 30</u>	Yearly Testing of Monitoring Wells

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SPECIAL LICENSE CONDITIONS (Instructions and Deadlines)

The Department of Environmental Conservation is required by Article 12 of the Navigation Law to protect and preserve the lands and waters of New York State from all discharges of petroleum from Major Oil Storage Facilities. To protect and preserve the waters of the State, owners/operators are required to show how they guard against contamination of surface and groundwater. Surface and groundwater protection at MOSF's is accomplished through the following:

1. installing groundwater monitoring wells;
2. monitoring groundwater quality;
3. developing and implementing the Spill Prevention and Containment Plan, Section 610.4(a)(4).

The following sections detail how to meet each of the conditions marked on the Special Conditions Check-list. Sections 1-3 correspond to the three elements of protecting the waters of the State. The section numbers on the check-list correspond to the following section numbers.

1. Installation of Monitoring Wells

Monitoring wells are needed to determine ambient groundwater quality and to detect possible groundwater contamination that could come from any portion of the facility. The number and location of wells must be approved by the Department. Plans of existing and/or proposed wells must be submitted to the issuing DEC Regional Office by the indicated date. Subject to DEC approval, these monitoring wells must be installed by the date set by the Department.

a. Initial Installation of Monitoring Wells

Install at least one (1) hydraulically up gradient of the facility and install at least three (3) wells hydraulically down gradient of the facility.

When adjacent facilities exist, monitoring wells should be placed on the property lines to determine the source of contamination. In this case, common monitoring wells will exist between facilities so the schedules for testing should be consistent.

Submit plan by _____

Date to be Installed _____

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b. Additional Monitoring Wells

Installation of additional wells are necessary based on site conditions, information obtained from existing wells and evidence of past spills or evidence of a potential spill source. The number and location of all additional monitoring wells must be submitted on a site plan for approval by the Regional Office prior to installation.

Number of Wells to be Installed _____

Submit plan by _____

Date to be Installed _____

2. Sampling and Testing of Monitoring Wells

Owners/operators shall conduct a groundwater sampling and testing program to ensure protection of groundwater at the major oil storage facility. All sampling and testing must be conducted by a private or "out-of house" laboratory that is certified by the NYS Department of Health. The laboratory must send the test results to both the facility and the DEC Regional Office. The facility operator may monitor free product without the aid of an outside contractor.

TABLE 1

Recommended Testing Methods for Detecting Petroleum in Groundwater

TYPE OF PETROLEUM	TESTING METHODS
Gasoline	EPA 602, 624, 503.1
Aviation Gasoline	EPA 602, 624, 503.1
Kerosene	EPA 625
Diesel	EPA 625
#2 Fuel Oil	EPA 625
#4, #5, #6 Fuel Oil	EPA 625

EPA 602 (EPA 8020) tests for seven compounds, including benzene, ethylbenzene, toluene and xylene (BETX) using a GC-PID (gas chromatograph - photo ionization detector) by P/T, purge and trap. This test is most effective in testing for volatile organic compounds in gasoline and aviation gasoline.

EPA 624 (EPA 8040) tests series covers a broader number of substances using GC-MS (gas chromatograph - mass spectrometer) by extraction. This is most effective in testing for volatile organic compounds found in gasoline.

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EPA 625 (EPA 8270) series covers a broader number of substances using a gas chromatographic/mass spectrometry (GC/MC) by extraction. This is useful for detecting semi-volatile organics found in kerosene, fuel oil, jet and diesel fuels. If gasoline and fuel oil are stored in the same area, both EPA 602 and EPA 625 may be used to determine if there is petroleum product present in the groundwater.

EPA 503.1 series was adapted by the New York State Department of Health to test drinking water. This series is applicable in the determination of 33 aromatic hydrocarbons using a chromatographic/photoionization detector. This is effective for detecting volatile organics found in light grade products, such as gasoline.

Additional analytical methods may be found in Chart 7-1, Section 7.0 of "Sampling Guidelines and Protocols", NYSDEC - Division of Water.

Prior to collecting a groundwater sample for analysis, a monitoring well must be purged. Purging of wells must consist of bailing 3 to 5 volumes of water present in the well prior to taking samples. If free product is found in any monitoring wells, the incident must be reported to the DEC Spill Hotline within two (2) hours. The owner/operator must perform the following testing and monitoring of wells, providing results and reports as scheduled.

a. Initial Testing of Monitoring Wells

All monitoring wells must have an initial testing to determine a baseline assessment of water quality, using appropriate methods discussed above.

Test Results to be Submitted by _____

b. Six Month Testing of Monitoring Wells

All monitoring wells must be retested six months after initial testing. This requires analytical testing as described above, refer to Section #2-a. Based on the results of the initial and six-month testing, the DEC Regional Office will establish a schedule for further sampling and testing.

Test Results to be Submitted by _____

c. Yearly Testing of Monitoring Wells

Annual testing of monitoring wells must be done between April 15 and May 15 of each year using the analytical tests that are described in Section 2, Table 1.

Test Results to be Submitted Annually by June 30 each year

d. Monthly Monitoring of Wells

Routine monitoring for free product is to be done at least monthly using manual methods, such as a bailer, product paste, electronic hydrocarbon probe, or other equivalent method. Results from the manual test are to be recorded and kept on file at the facility as part of the facility's monthly inspection. If free product is found, the Department must be notified on the DEC Spill Hotline within two (2) hours. The Department may request that these monthly reports be submitted to the Regional Office.

 Submit Monitoring Well Monthly Reports to Regional Office

 X Keep Monitoring Well Monthly Reports on file at facility.

3. State Spill Prevention and Containment Plan

A State Spill Prevention and Containment Plan prepared in accordance with 6NYCRR Section 610.4(a)(4) must be submitted to the Department prior to the issuance of a license. The following are considered elements of a State Spill Prevention and Containment Plan:

1. Spill Prevention Control and Countermeasure Plan (SPCC Plan) written according to 40 CFR 112;
2. Operations Manual written according to 33 CFR 151, 154, 155 and 156;
3. Facility Response Plan written according to Oil Pollution Act (OPA) of 1990;
4. Groundwater Contingency Plan written according to Special License Condition and Part 610.4(a)(4)(iv);
5. Site Plan written according to Special License Condition and Part 610.4(a)(iii);
6. Description of Previous Spills written according to Special License Condition and Part 610.4(a)(4)(ii);
7. Compliance Report written according to Special License Condition and Part 610.5(a)(4);
8. Inspection records for secondary containment pursuant to Section 613.6(c).

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a. PE Certification/Management Review

A licensed professional engineer, preferably a New York State licensed P.E., must certify that the Plan has been prepared in accordance with good engineering practices. The Plan must be updated and recertified whenever any major additions, changes or rehabilitation occurs, as defined in 6NYCRR Section 610.5(c)(2). If no major changes occur, then the owner or operator must complete a review and evaluation of the Plan at least every three years. The owner/operator must submit all recertification or management reviews to the Regional Office.

PE Certification/Management Review to be Submitted by _____

b. Description of Secondary Containment System

Owners or operators of onshore Major Oil Storage Facilities shall submit a description of the existing secondary containment system in detail, and explain how this system prevents a spill of petroleum from reaching the lands or waters outside the containment area before cleanup occurs.

Secondary Containment Description to be Submitted by _____

c. Testing of Secondary Containment System

The secondary containment system shall be tested according to the guidance provided in the Department's technical guidance memo, SPOTS 10. The Plan must contain a description of the procedures and methods used to inspect and test the effectiveness of the system along with the results of permeability tests and geological studies showing the groundwater flow direction, minimum time for the lightest product stored within the secondary containment area to contact the groundwater and a subsoil profile.

Test Results to be Submitted by _____

d. Engineering Plan For Upgrading Secondary Containment System

If the secondary containment system does not meet the standards set forth in 6NYCRR Section 613.3(6), then an engineering plan certified by a professional engineer, preferably a New York State Licensed Engineer, must be submitted to the DEC Regional Office describing how the existing system will be improved. This plan should include the composition and permeability of the existing soil, the methodology that will be used to upgrade the secondary containment system, such as a synthetic liner, the specifications of the material to be used, installation procedures and the proposed permeability of the resulting containment system.

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This plan must be submitted to and approved by the DEC Regional Office before construction is started.

Engineering Plan to be submitted by _____

e. Implementation of Engineering Plan

After the engineering plan to improve the secondary containment system has been reviewed and is acceptable to the Department, the owner or operator will begin implementation of the proposed secondary containment system.

Construction to be completed by _____

f. Site Map

The Plan must contain a site map showing the location of all surface water, observation, monitoring, and recovery wells, location of tanks and their respective secondary containment areas, product transfer areas, and spill clean-up equipment storage. This site plan must be drawn to scale.

Site Map to be submitted by _____

g. Description of Previous Spills

The Plan must contain a description of all spills, discharges and clean-up activities during the previous year. This description must include the cause, type and amount of product spilled and recovered, corrective action taken, clean-up effectiveness, long-term clean-up plans and plans for preventing the recurrence of such a spill or discharge.

Description of Previous Spills to be Submitted by _____

h. Compliance Report

The Plan must contain an assessment of compliance with the 6 NYCRR Parts 610, 611, 613, 614; 17 NYCRR Parts 30 and 32; and 40 CFR 112 and special conditions required under this license. This must include a status report and schedule for compliance. Guidance and reporting format is available from the Regional Office.

Compliance Report to be submitted by _____

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I. Updated SPCC Plan and Facility Response Plan which may be required by 40 CFR 112 and Oil Pollution Act of 1990.

Facility Response Plans are required under the Oil Pollution Act (OPA) of 1990 for any on-shore facility that could reasonably be expected to discharge oil to navigable waters, adjoining shoreline or to the exclusive economic zone. These must contain plans for responding, to the maximum extent practical, to a worse-case discharge.

Any facility which must have a Facility Response Plan pursuant to OPA must file the plan and any subsequent amendments with the Department. Such plan must be filed concurrent with the filing with the President.

U.S. Environmental Protection Agency has proposed amendments to the rules for preparing SPCC Plans (40 CFR 112). Any amendments to the SPCC Plan required by future revisions to 40 CFR 112 or any other update or change whatsoever must be filed with the Department.

Updated SPCC Plan and Facility Response Plan to be submitted by _____

j. Inspection Certification of Secondary Containment Systems.

Secondary containment systems must be inspected and certified monthly that the secondary systems still meet the standards set forth in 6 NYCRR Section 613.3(c)6. Certification must identify any deficiency found during the inspection and any subsequent repairs rendered. See Section 613.6(a) and (c).

The Department will accept documented monthly inspections that are "visually performed", if these are performed in conjunction with in-depth integrity inspections performed on a frequency not to exceed five years, with such in-depth inspections conducted and certified by a licensed Professional Engineer. The Regional Office must be notified prior to any modifications and repairs to the secondary containment systems. The Regional Office will decide if additional information or plans are required.

This requirement applies only to aboveground (free standing) tanks with a capacity in excess of ten thousand gallons, or to other tanks specifically designated due to their proximity to water. This requirement does not apply to underground tanks and NYC mounded tanks.

In-depth Integrity Inspection and Certification to be submitted by 8-31-01 and every five years thereafter.

4. MTBE Monitoring

Owners/operators shall conduct a groundwater sampling and testing program to ensure protection of groundwater at the major oil storage facility. All sampling and testing must be conducted by a private or "out-of house" laboratory that is certified by the NYS Department of Health. The laboratory must send the test results to both the facility and the DEC Regional Office. The facility operator may monitor free product without the aid of an outside contractor. MTBE Monitoring can be performed concurrently with Sampling and Testing of Monitoring Wells. See Special Condition 2.

TABLE 2

Recommended Testing Methods for Detecting MTBE in Groundwater

TYPE OF PETROLEUM	TESTING METHODS
Volatile Organic Compounds*	502.2, 524.2, 602, 624, 8020, 8021, 8260

**Measurements of MTBE are not standard outputs of these test methods. To obtain such measurements, the lab must be instructed to add these as target analytes.*

EPA 602 (EPA 8020) test for seven compounds, including benzene, ethylbenzene, toluene and xylene (BTEX) using a GC-PID (gas chromatograph -photo ionization detector) by purge and trap. This test is effective in testing for volatile organic compounds found in gasoline. Method 602 does not include the isomers of xylene as target analytes. To obtain measurements of these isomers, the lab must be instructed to add these as target analytes.

EPA 624 (EPA 8260) test series covers a broader number of substances using GC-MS (gas chromatograph -mass spectrometer) by extraction. This is effective in testing for volatile organic compounds in gasoline and aviation gasoline.

EPA 625 (EPA 8270) test series covers a broader number of substances using a gas chromatographic/mass spectrometry (GC/MC) by extraction. This is useful for detecting semi-volatile organics found in kerosene, fuel oil, jet and diesel fuels. If gasoline and fuel oil are stored in the same area, both EPA 602 and EPA 625 may be used to determine if there is petroleum product present in the groundwater.

The EPA 500 test series was adopted by the New York State Department of Health to test drinking water. The 502.2 test is applicable in the determination of 33 aromatic hydrocarbons using a chromatographic/photo ionization detector. This is effective for detecting volatile organics found in light grade products, such as gasoline.

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EPA 524.2 is a capillary column GC/MS purgeable organics test for volatile organics which have a vapor pressure equal to or greater than 0.1 mm of Hg. The method which is suited for the detection of MTBE is described in EPA's reference "Methods For The Determination of Organics Compounds In Drinking Water."

a. Initial Testing of Monitoring Wells

All monitoring wells must have an initial test to determine a baseline assessment of water quality, using appropriate methods discussed above.

Test Results to be Submitted by _____

b. Six Month Testing of Monitoring Wells

All monitoring wells must be retested six months after initial testing. This requires analytical testing as described in Section #4-a. Based on the results of the initial and six-month testing, the DEC Regional Office will establish a schedule for further sampling and testing.

Test Results to be Submitted by _____

c. Yearly Testing of Monitoring Wells

Annual testing of monitoring wells must be done between April 15 and May 15 of each year using the analytical tests that are described in Section 4, Table 2.

Test Results to be Submitted Annually by June 30

GUIDELINES ON INSTALLATION OF MONITORING WELLS

The following is the Department's guidance on installation of monitoring wells at on-shore Major Oil Storage Facilities.

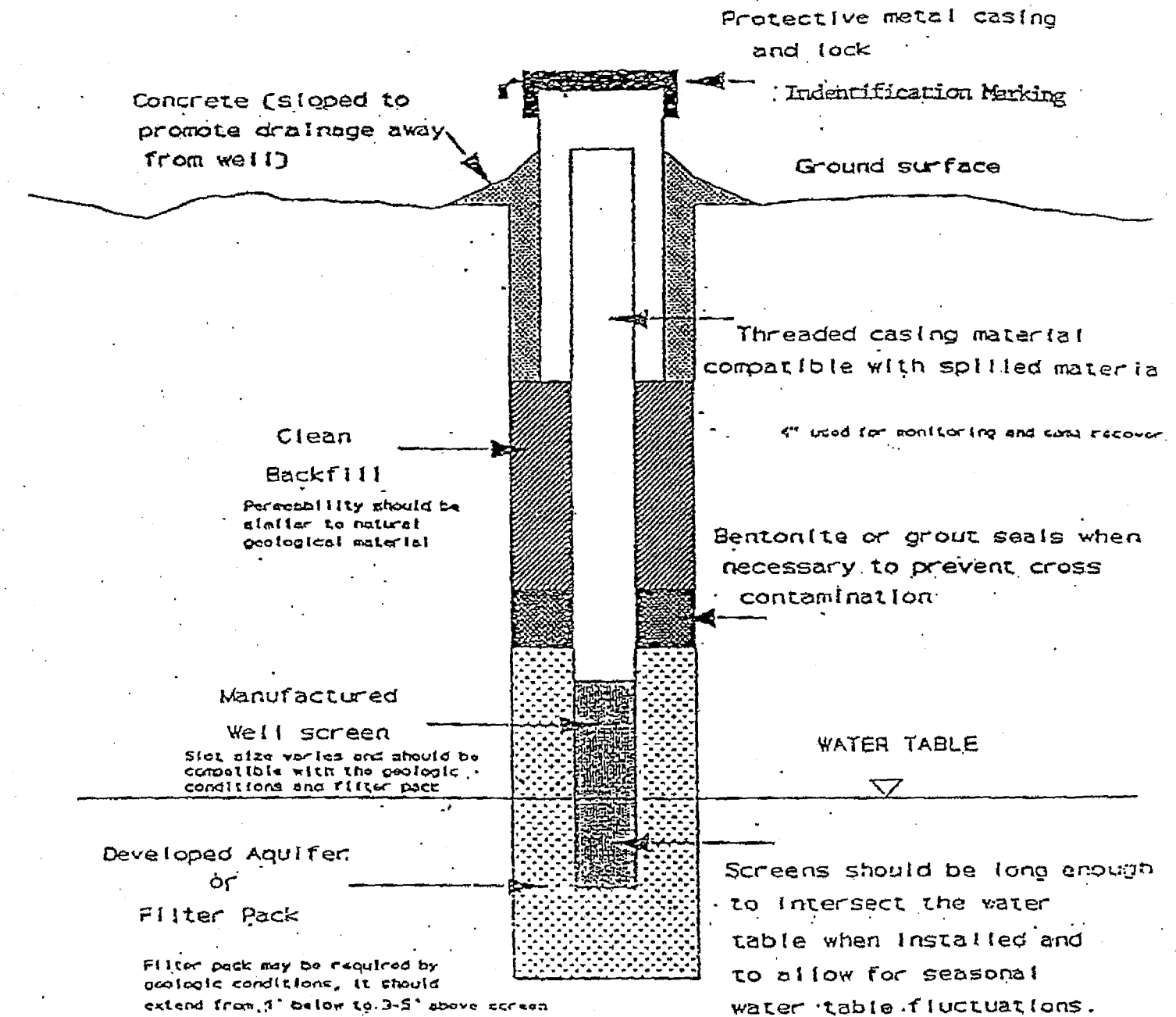
1. All wells must be four (4) inches in diameter.
2. A log must be kept for each boring that is made. Soil samples must be taken when the composition of the soil layer changes or at five (5) foot intervals, whichever comes first, and a general description of the composition of the soil, as well as the depth that groundwater was first encountered.
3. Monitoring wells must be installed plum and straight.
4. Flush threaded joints, instead of glued joints, must be used to avoid contamination of the groundwater.
5. Well screens are to be machine slotted, and must be of adequate length and placement to accommodate seasonal variations in the water table.
6. Filter pack must be compatible with soil around the screened portion of the well and with the screen opening. The filter pack must extend approximately one foot below the screen and three to five feet above the screen.
7. The well must be sealed between the casing and the bore hole with an impermeable material, such as bentonite, to prevent contamination of the aquifer due to surface run off.
8. The well must be sufficiently developed to ensure that the well is free flowing and accurately represents the conditions of the groundwater table.
9. The tops of all wells must be enclosed by a protective metal casing that has a locking cap. All wells must be capped and locked at all times. In addition, the monitoring well should be assigned an arbitrary number, such as MW #1. This number should be marked on the monitoring well, as well as any site plans, to facilitate the coordination of the groundwater sampling program.
10. All well caps must be clearly marked "Monitoring Well".

All monitoring wells must conform to the well specifications given in this section. The number and location of monitoring wells will be determined by the DEC regional office based on topography and geological studies of the facility. A drawing of an acceptable monitoring well is given on the next page.

All monitoring wells shall be installed outside a secondary containment area. If it is impractical to install the monitoring wells outside of a containment area, a variance must be obtained from the Department. Monitoring wells that are installed inside the secondary containment area must have water tight well caps or placing the top of the well above the height of the dike wall. In addition, the well casing must be properly sealed to prevent infiltration of petroleum in the event of a spill.

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TYPICAL MONITORING WELL CONSTRUCTION



REFERENCES

1. Analytical Handbook

New York State Department of Health (NYSDOH)
Division of Laboratories and Research
Toxicity Center
Albany, New York 12201

2. Analytical Services Protocol

New York State Department of Environmental Conservation
Bureau of Technical Services and Research, Room 301
50 Wolf Road
Albany, New York 12233-3502

3. SPOTS 9, *Inspection of Major Oil Storage Facilities.*4. SPOTS 10, *Spill Prevention and Containment Plan-State Plan.*

MOSF-LP-19

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New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 2
47-40 21ST Street, Long Island City, NY 11101-5407
Phone: (718) 482-6455 • **FAX:** (718) 482-6390
Website: www.dec.ny.gov



Alexander B. Granitis
Commissioner

CERTIFIED MAIL--RETURN RECEIPT REQUESTED
NOTICE OF VIOLATION

09/16/2008

JAMES LINTZ
MOTIVA ENTERPRISES LLC
25 PAIDGE AVENUE
BROOKLYN, NY 11222

Re: Chemical Bulk Storage (CBS) Program Site
Inspection -6NYCRR Parts 595-599
CBS# 2-000209, Inspection# 14739
MOTIVA ENTERPRISES LLC
25 PAIDGE AVENUE
BROOKLYN, NY 11222

Dear James Lintz:

On September 11, 2008, Department's staff inspected the MOTIVA ENTERPRISES LLC facility to determine compliance with New York State's CBS regulations. The following violations were identified during that inspection and need your immediate attention to bring your facility into compliance. Citations to the applicable regulations are noted in brackets and pertain to the tanks listed. Enclosed to this letter is a CBS application.

The law requires that you comply fully with the CBS regulations. You must correct all of the violations noted below within the stated time frames and submit required documentation.

CBS Registration Certificate - Accuracy of Information - [§596.2(f)]

The registration information is not current. Enclosed is a CBS application form that you may use to correctly inform the Department of the status of your site and/or the status of any particular tank. Return the completed form within 7 calendar days from the date of receipt of this letter. In particular, Tank # 52 is underground-not underground, vaulted, with access as it is in the facility's information report; Tank # 52 does not have vapor wells for internal monitoring; the name of the emergency contact is incorrect.

Spill Prevention Report (SPR) - A. Preparation of SPR [§598.1(k)(1)]

By August 11, 1996, the owner or operator of any site must prepare and maintain an SPR at the site. The SPR should have been developed at the time of installation and updated every year. This report does not comply with the requirements listed below.

Has not been updated annually or whenever a significant release occurred or a substantial modification was made [§598.1(k)(1)].

Within 30 calendar days from the date of receipt of this letter, the owner shall update and submit to this office a site-specific SPR.

A copy of the current registration application is not included in the SPR [§598.1(k)(2)(i)]. The owner shall include a copy of the current application in the SPR.

The SPR lacks an up-to-date site map that is sufficiently detailed to locate and identify tanks, transfer stations and connecting pipes [§ 598.1(k)(2)(iii)]. Within 30 calendar days from the date of receipt of this letter, the owner/operator shall submit to this office an up-to-date sufficiently detailed site map.

Shell/Motiva 0009216

There is no listing and/or description of the magnitude and impact of reportable spills over the past five years or the information is not current [§598.1(k)(2)(v)]. Within 30 calendar days from the date of receipt of this letter, the owner/operator shall submit to this office a current listing and description of all reportable spills over the past five years. If there have been no reportable spills, a certified statement to that effect is acceptable.

A spill response plan must be prepared and include: a prediction of the direction of flow/dispersion of a spill; a map showing areas impacted by a spill including sewers, drainage ditches, water supplies, wells, streams and populated areas; a list of equipment and materials to contain a spill; name and phone number for emergency contacts, coordinators, and clean-up contractors; spill reporting procedures; plans for annual drills; and other information consistent with generally accepted spill prevention control and countermeasure practices.

A spill response plan has not been prepared or has not been incorporated into the SPR [§598.1(k)(2)(x)]. Within 30 days from the date of receipt of this letter, the owner/operator shall submit to this office a detailed spill response plan.

B. SPR - Inspections

AST Systems - Annual Inspections

The owner/operator must conduct a comprehensive annual inspection of aboveground storage tank systems to include visually inspecting for cracks, corrosion, poor maintenance and operating practices, excessive settlement of structures, separation or swelling of tank insulation, malfunctioning equipment, safety interlocks safety trips, automatic shutoffs, leak detection and monitoring, warning or gauging equipment which may not be operating properly; and including reviewing compliance with Parts 598 and 599. The inspection shall also include an inspection of the cathodic protection system for aboveground tanks and piping subject to corrosion [§598.7(c)(1)]. Further, the qualified technician must sign and date a statement certifying that the test or inspection has been performed in a manner consistent with the requirements of Part 598 and records must be kept for five (5) years [§598.8].

TANK # 9, 10, 51, 52, 54

The annual inspection for these tanks has not been performed in a manner consistent with the requirements [§598.7(c)(2)]; for example, secondary containment and piping systems were not listed as inspected. Within 30 calendar days from the date of receipt of this letter, the owner/operator shall have the required annual test performed and submit report to this office. Items of non-compliance are listed below.

AST Systems - 5 Year Inspections

The owner/operator must conduct a five-year inspection of all aboveground tank and piping systems. The inspection must be consistent with a consensus code, standard, or practice that is developed by a nationally recognized association or independent testing laboratory. Based upon the inspection, an assessment and evaluation must be made of system tightness, structural soundness, corrosion, wear, foundation weakness and operability, etc. Further, the engineer or qualified technician must sign and date a statement certifying that the test or inspection has been performed in a manner consistent with the requirements of Part 598 and records must be kept for 10 years.

a. Aboveground Tanks -

TANK # 9, 10, 51, 54

* The 5-year inspection for these tanks has not been conducted in accordance with a consensus code, standard, or practice developed by a nationally recognized association or independent testing laboratory [§598.7(d)]; for example, secondary containments were not listed in the inspection report; inspections for Tanks # 9 and 10 must be signed by a PE registered in New York State. Within 30 calendar days from the date of receipt of this letter, the owner/operator shall have the required 5-years inspection performed or deficiencies corrected and submit report to this office.

b. Aboveground Piping -

TANK # 9, 10, 51, 54

The 5-year inspection for this piping has not been conducted in accordance with a consensus code, standard, or practice developed by a nationally recognized association or independent testing laboratory. Within 30 calendar days from the date of receipt of this letter, the owner/operator shall have the required 5-years inspection performed or deficiencies corrected and submit report to this office.

Status report on compliance with Parts 596, 598 and 599 must be developed [§598.7(c)(v)] and [§598.1(k)(2)(vii)]

TANK # 9, 10, 51, 52, 54

A compliance review has not been prepared and incorporated into the SPR [§598.1(k)(2)(vii)]. Within 30 days from the date of receipt of this letter, the owner/operator shall submit to this office a detailed compliance review.

Secondary Containment for Transfer Stations: [§598.5(d) & §599.17(c)]

TANK # 9, 10, 51, 52, 54

The transfer station for these tanks does not have a secondary containment system.

Within 30 days from the date of receipt of this letter, the owner/operator shall submit to this office a design that meets the requirement of 599.17 (c)(2). Within 60 days of department approval of the design, construction of the secondary containment system for the transfer station shall be completed. All transfers of hazardous substances must occur at a transfer station equipped with a permanently installed secondary containment system. The containment system must have an acceptable spill containment volume; satisfy permeability to the substance stored; must be constructed, coated, or lined with materials that are compatible with the substance stored; and be equipped with a sump & manually-controlled drainage system which must be locked closed [§599.17(c)(2)].

The owner/operator may also apply for a variance from provisions of 6NYCRR 598.5(d) and 599.17(c) to:

*New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Technical Support, 11th Floor
625 Broadway, 11th Floor Albany, NY 12233-7020
attn : Andrew J. English, PE, Director*

Fill port labels

TANK # 9, 10, 51, 54

All fill and dispensing ports for aboveground tanks which are remote to the tank must be labeled with the chemical name or common name, the design capacity and working capacity of the tank, the tank identification number as shown on the registration certificate, and must display legible and clearly visible hazard warnings as required by 9 NYCRR Section 1174.1(h) of the New York State Uniform Fire Prevention and Building Code. The remote fill ports for these tanks are not labeled as required under §596.2(h), §598.4(b)(8), and §599.17(b)(1)(ii). Within 30 days from the date of receipt of this letter, the owner/operator shall submit to this office photographic evidence that the remote fill ports have been properly labeled.

Hazardous Substance Level Gauge - [§599.17(b)(1)(iii)]

a. Where filling or emptying is remotely operated, all gauges must be located at the remote operating station. In addition, remote flow controls shall be provided.

TANK # 9, 10, 51, 54

The remote fill port for these tanks system does not have the required level gauge and flow control.

Within 30 days from the date of receipt of this letter, the owner/operator shall submit to this office certification, sign document and photographic evidence that the required level gauge for the remote fill ports for these tanks system is

installed and operational.

TANK # 9, 10, 51, 54

Where safety, pressure relief or vacuum relief valves are used, each must be permanently labeled with the required information of this Section [§599.18(d)]. The labeling must be provided on the valve itself, or on a plate or plates securely fastened to the valve. Labels may be stamped, etched, impressed or cast in the valve or nameplate. All or portions of the required label information have not been provided for the valves associated with these tanks [§599.18(d)]. Within 30 days from the date of receipt of this letter, the owner/operator shall submit to this office photographic evidence that the remote fill ports have been properly labeled.

Valves & Couplings - [§599.17(b)(2)]

All valves and couplings used in making a transfer must meet the following standards.

1. Any coupling or open-ended valve used for making a transfer must be located within the secondary containment system of the transfer station;
2. Where a product transfer line or fill line is not drained of liquid upon completion of a transfer operation, it must be equipped with a valve such as a dry disconnect shutoff valve which prevents discharges from the line;
3. Where siphoning or backflow is possible, fill pipes must be equipped with a properly functioning check valve, siphon break, or equivalent device or system which provides automatic protection against backflow; and
4. Each tank connection through which a hazardous substance can normally flow must be equipped with an operating valve or other appropriate means to control such flow.

These valves and couplings do not comply with the following requirement(s).

TANK # 9, 10, 51, 54

For these tanks, the product transfer line or fill line remains full of liquid upon completion of a transfer operation and is not equipped with the required valve such as a dry disconnect shutoff valve, which prevents discharges from the line. Within 30 days from the date of receipt of this letter, the owner/operator shall submit to this office certification and documents that valves and couplings for these tanks system comply with these requirements.

Corrective Action and Penalties

As a result of these violations, you are subject to penalties. Pursuant to Environmental Conservation Law Section 71-4303, you may be liable for a civil penalty of up to \$25,000 per day for each of the above noted violations. The violations identified in this letter require your immediate attention. Delays in correcting the violations noted above will affect the amount of penalties for which you will be liable. In addition, under Environmental Conservation Law Section 71-1933, a person may be held criminally liable if any of the foregoing violations was the result of intentional, knowing or criminally negligent conduct.

Note that the inspection may not have disclosed all violations that exist at your site. You are responsible for ensuring that the entire facility is in compliance with applicable requirements.

If you have any questions, please call me at (718) 482-6455.

Sincerely,



Leszek Zielinski
Environmental Engineer
Remediation Section C

cc: Jacob Krimgold, NYSDEC

Hazardous Substance Bulk Storage Application

Pursuant to the Hazardous Substance Bulk Storage Law, Article 40 of ECL and 6 NYCRR 595-599

Return Completed Form & Fees To:NYSDEC
Spill Prevention & Bulk Storage Section
625 Broadway, 11th Floor
Albany, NY 12233-7020Please Type or Print Clearly
and Complete All Items**Section A**

(See enclosed instructions and please be sure to complete Sections A & B)

Expiration Date: 11/30/2008

CBS Number 2-000209 DEC PBS Number: (If applicable) DEC MOSF Number: (If applicable) DEC SPDES Number: (If applicable) Transaction Type (Check all that apply) NOTE: Transaction Types 1, 2 and 5 require a fee <input type="checkbox"/> 1)Initial/ New Facility <input type="checkbox"/> 2)Change of Ownership <input type="checkbox"/> 3)Substantial Tank Modification <input checked="" type="checkbox"/> 4)Information Correction <input type="checkbox"/> 5) Renewal	F A C I L I T Y O W N E R	Facility Name: MOTIVA ENTERPRISES LLC	TYPE OF CHEMICAL FACILITY (Check only one)	
		Location (Not P.O. Boxes) 25 PAIDGE AVENUE	<input checked="" type="checkbox"/> 01=Storage Terminal	<input type="checkbox"/> 03=Other Wholesale/Retail Sales
		Location (cont.):	<input type="checkbox"/> 02=Retail Gasoline Sales	<input type="checkbox"/> 05=Utility (Other Than Municipal)
		City: BROOKLYN State: NY Zip Code: 11222	<input type="checkbox"/> 04=Manufacturing (Other Than Chemical)/Processing	<input type="checkbox"/> 07=Apartment Building
		County: Kings Township or City: New York City	<input type="checkbox"/> 06=Trucking/Transportation /Fleet Operation	<input type="checkbox"/> 09=Farm
		Name of Operator at Facility: MOTIVA ENTERPRISES LLC	Facility Telephone Number: (718) 383-4066	<input type="checkbox"/> 10=Private Residence
		Emergency Contact Name: MARIO D'ANTONIO	Emergency Telephone Number: (718) 383-4066	<input type="checkbox"/> 11=Airline/Air Taxi
		Owner Name: MOTIVA ENTERPRISES, LLC	<input type="checkbox"/> 12=Chemical Distributor	<input type="checkbox"/> 13=Municipality (Incl. Waste Water Treatment Plants, Utilities, Swimming Pools, etc.)
		Address (Street and/or P.O.): 1100 LOUISIANA STREET, SUITE 2200	<input type="checkbox"/> 15=Railroad	<input type="checkbox"/> 21=Swimming Pools (Other than Municipal)
		City: HOUSTON State: TX Zip Code: 77002	<input type="checkbox"/> 20=Chemical Manufacturing	<input type="checkbox"/> 99=Other (Specify) _____
Federal Tax ID Number: 76-0262490	Owner Telephone Number: (718) 383-4066	I hereby certify that the information on this form is true and correct. False statements made herein may be punishable as a criminal offense in accordance with applicable State and federal law. The facility has maintained its requirements relating to daily, monthly, annual and five year inspections as required by Part 598.7 and has had its SPR annually updated as required by Part 598.1(k).		
Type of Owner: 2 <input type="checkbox"/> State Government 4 <input type="checkbox"/> Federal Government 1 <input type="checkbox"/> Private Resident 3 <input type="checkbox"/> Local Government 5 <input checked="" type="checkbox"/> Corporate/Commercial	Name of Owner or Authorized Representative: MARIO A. D'ANTONIO	Amount Enclosed: \$		
Spill Prevention Report In addition, a copy of the Spill Prevention Report (SPR)'s cover page, table of contents and signature page is submitted. *** SPR: YES <input type="checkbox"/> NO <input type="checkbox"/>	Title: COMPLEX MANAGER	Signature: _____ *** Date: ***		
*** Application will be returned if these items are blank	Attention: MARIO D'ANTONIO Name of Company: MOTIVA ENTERPRISES LLC Address: 25 PAIDGE AVENUE Address: City/State/Zip Code: BROOKLYN NY 11222 Telephone Number: (718) 383-4066 E-Mail Address:	OFFICIAL USE ONLY Page ____ of ____ Date Received ____/____/____ Date Processed ____/____/____ Amount Received \$ _____ Reviewed by _____		

Shell/Motiva 0009220

CBS Number:

2-000209

Section B - Tank Information

(See enclosed instructions and use the key located on the bottom of this sheet to complete each item/column)

Registration Expiration Date:

11/30/2008

(1) Action	(2)			(3) Tank Location	(4) Status	(5) Installation or Permanent Closure Date (Month/ Day/Year)	(6) Capacity (Gallons)	(7) Tank Type	(9) Tank Internal Protection	(10) Tank External Protection	(11) Tank Secondary Containment	(12) Tank Leak Detection	(13) Tank Overfill Prevention	(14) Spill Prevention	(16) Piping Location	(17) Piping Type	(18) Piping Secondary Containment	(19) Piping Leak Detection	(20) Piping Leak Detection	(22) Hazardous Substance Name (List <u>all</u> Part 597 Substances, if more than 3 please list on separate sheet)	(23) CAS Number	(24) % of Haz Sub	Tank Fee \$
	Tank Model	Piping Model	Tank Number																				
			10	1	1	1/1/1945	10,000	01	00	01 03	01	06	02		01	01	01	01		XYLENE (MIXED)	1330-20-7	3	
			51	3	2	10/1/1990	5,000	01	00	01 03	01	06	02		01	01	01	01		XYLENE (MIXED)	1330-20-7	5	
			52	6	1	12/1/1990	4,000	01	00	01	04	03	01		01	01	01	01		XYLENE (MIXED)	1330-20-7	17	
			54	1	1	10/1/1993	5,014	01	00	01 03	01	06	02 04		01	01	03	01		XYLENE (MIXED)	1330-20-7	17	
			9	3	1	4/1/1945	10,000	01	00	01 03	01	06	02		01	01	01	01		XYLENE (MIXED)	1330-20-7	27	

Action (1)

- Initial Listing
- Add Tank
- Close/Remove Tank
- Information Correction
- Recondition/Repair/ Reline Tank

Status (4)

- In-service
- Temporarily out-of-service
- Closed-Removed
- Closed- In Place
- Tank converted to Non-Regulated use

Tank Type (8)

- Steel/Carbon Steel/Iron
- Galvanized Steel Alloy
- Stainless Steel Alloy
- Fiberglass Coated Steel
- Steel Tank in Concrete
- Fiberglass Reinforced Plastic (FRP)
- Plastic
- Equivalent Technology
- Concrete
- Urethane Clad Steel
- Other-please list:*

Internal Protection (9)

- None
- Epoxy Liner
- Rubber Liner
- Fiberglass Liner (FRP)
- Glass Liner
- Other-please list:*

External Protection (10/18)

- None
- Painted/Asphalt Coating
- Original Sacrificial Anode
- Original Impressed Current
- Fiberglass
- Jacketed
- Wrapped (Piping)
- Retrofitted Sacrificial Anode
- Retrofitted Impressed Current
- Urethane
- Other-please list:*

Tank Leak Detection (12)

- None
- Interstitial Electronic Monitoring
- Interstitial Manual Monitoring
- Vapor Well
- Groundwater Well
- In-Tank System (ATG)
- Impervious Barrier/Concrete Pad (A/G)
- Other-please list:*

Piping Type (17)

- None
- Steel/Carbon Steel/Iron
- Galvanized Steel
- Stainless Steel Alloy
- Fiberglass Coated Steel
- Steel Encased in Concrete
- Fiberglass Reinforced Plastic (FRP)
- Plastic
- Equivalent Technology
- Concrete
- Copper
- Flexible Piping
- Other-please list:*

Overfill Prevention (13)

- None
- Float Vent Valve
- High Level Alarm
- Automatic Shut-off
- Product Level Gauge (A/G)
- Vent Whistle

Secondary Containment (11/19)

- None
- Diking (A/G)
- Vault (w/access)
- Vault (w/o access)
- Double-Walled (U/G)
- Synthetic Liner
- Remote Impounding Area
- Excavation/Trench Liner System
- Flexible Internal Liner (Bladder)
- Modified Double-Walled (A/G)
- Impervious Underlayment
- Double Bottom (A/G)
- Other-please list:*

Spill Prevention (14)

- None
- Catch Basin
- Transfer Station Containment
- Other-please list:*

Piping Location (16)

- No Piping
- Aboveground
- Underground/On-ground
- Aboveground/Underground Combination

Pipe Leak Detection (20)

- None
- Interstitial Electronic Monitoring
- Interstitial Manual Monitoring
- Vapor Well
- Groundwater Well
- Pressurized Piping Leak Detector
- Tank Top Sump (Piping)
- Exempt Suction Piping
- Other-please list:*

* If other, please list on a separate sheet incl. Tank Number

DOCUMENT INFO

28
32

DocID: 00000424

Filename: 58603-2010-10-06-PER-01 (CBS Renewal
Application - Motiva).pdf

October 06, 2010

New York State Department of Environmental Conservation
Spill Prevention & Bulk Storage Section
625 Broadway, 11th Floor
Albany, NY 12233-7020

**SUBJECT: HAZARDOUS SUBSTANCE BULK STORAGE
MOTIVA ENTERPRISES LLC –
BROOKLYN TERMINAL CBS NO. 2-000209
CBS RENEWAL APPLICATION**

Dear Madam or Sir:

Enclosed is the Hazardous Substance Bulk Storage Application for renewal of the Chemical Bulk Storage License for the Motiva Enterprises LLC Brooklyn Terminal located at 25 Paidge Avenue, Brooklyn, New York 11222. Also is enclosed is a check for the applicable fee.

Please contact me at 718-383-4066 if you have any questions about the information provided.

Very truly yours,

MOTIVA ENTERPRISES LLC



James W. Lintz
Complex Manager

Enclosure

cc: J. Bothwell, Motiva

File: 750-04 ENV.01.03

25 Paidge Avenue

Brooklyn, NY 11222

Phone: 718-383-4066

Fax: 718-383-4066



Hazardous Substance Bulk Storage Application

Pursuant to the Hazardous Substance Bulk Storage Law, Article 40 of ECL and 6 NYCRR 595-599

Section A

 Please Type or Print Clearly
 and Complete All Items

(See enclosed instructions and please be sure to complete Sections A & B)

Return Completed Form & Fees To:

 NYSDEC
 Spill Prevention & Bulk Storage Section
 625 Broadway, 11th Floor
 Albany, NY 12233-7020


Expiration Date: 11/30/2010

CBS Number 2-000209 DEC PBS Number: (If applicable) DEC MOSF Number: (If applicable) 2-1540 DEC SPDES Number: (If applicable) NY-0006131 Transaction Type (Check all that apply) NOTE: Transaction Types 1, 2 and 5 require a fee <input type="checkbox"/> 1) Initial/ New Facility <input type="checkbox"/> 2) Change of Ownership <input type="checkbox"/> 3) Substantial Tank Modification <input type="checkbox"/> 4) Information Correction <input checked="" type="checkbox"/> 5) Renewal	F A C I L I T Y O W N E R C O R R E S P O N D E N C E	Facility Name: MOTIVA ENTERPRISES LLC	TYPE OF CHEMICAL FACILITY (Check only one)	
		Location (Not P.O. Boxes) 25 PAIDGE AVENUE	<input checked="" type="checkbox"/> 01=Storage Terminal	<input type="checkbox"/> 03=Other Wholesale/Retail Sales
		Location (cont.):	<input type="checkbox"/> 02=Retail Gasoline Sales	<input type="checkbox"/> 05=Utility (Other Than Municipal)
		City: BROOKLYN State: NY Zip Code: 11222	<input type="checkbox"/> 04=Manufacturing (Other Than Chemical)/Processing	<input type="checkbox"/> 07=Apartment Building
		County: Kings Township or City: New York City	<input type="checkbox"/> 06=Trucking/Transportation /Fleet Operation	<input type="checkbox"/> 09=Farm
		Name of Operator at Facility: MOTIVA ENTERPRISES LLC Facility Telephone Number: (718) 383-4066	<input type="checkbox"/> 08=School	<input type="checkbox"/> 11=Airline/Air Taxi
		Emergency Contact Name: JAMES W. LINTZ Emergency Telephone Number: (718) 383-4066	<input type="checkbox"/> 10=Private Residence	<input type="checkbox"/> 13=Municipality (Incl. Waste Water Treatment Plants, Utilities, Swimming Pools, etc.)
		Owner Name: MOTIVA ENTERPRISES, LLC	<input type="checkbox"/> 15=Railroad	<input type="checkbox"/> 21=Swimming Pools (Other than Municipal)
		Address (Street and/or P.O.): 1100 LOUISIANA STREET, SUITE 2200	<input type="checkbox"/> 20=Chemical Manufacturing	<input type="checkbox"/> 99=Other (Specify) _____
		City: HOUSTON State: TX Zip Code: 77002	I hereby certify that the information on this form is true and correct. False statements made herein may be punishable as a criminal offense in accordance with applicable State and federal law. The facility has maintained its requirements relating to daily, monthly, annual and five year inspections as required by Part 598.7 and has had its SPR annually updated as required by Part 598.1(k).	
Federal Tax ID Number: 76-0262490 Owner Telephone Number: (718) 383-4066	Name of Owner or Authorized Representative: JAMES W. LINTZ	Amount Enclosed: \$ 500.00		
Type of Owner: 2 <input type="checkbox"/> State Government 4 <input type="checkbox"/> Federal Government 1 <input type="checkbox"/> Private Resident 3 <input type="checkbox"/> Local Government 5 <input checked="" type="checkbox"/> Corporate/Commercial	Title: COMPLEX MANAGER	***		
Signature: <i>James W. Lintz</i>		*** Date: 10-6-2010 ***		
Spill Prevention Report In addition, a copy of the Spill Prevention Report (SPR)'s cover page, table of contents and signature page is submitted. *** SPR: YES <input type="checkbox"/> NO <input type="checkbox"/>			OFFICIAL USE ONLY Page ____ of ____ Date Received ____/____/____ Date Processed ____/____/____ Amount Received \$ _____ Reviewed by _____	
*** Application will be returned if these items are blank ***				

Shell/Motiva 0009224

CBS Number:

2-000209

Section B - Tank Information

(See enclosed instructions and use the key located on the bottom of this sheet to complete each item/column)

Registration Expiration Date:

11/30/2010

(1) Action	(2) Tank Number <div>IMPORTANT: Tank numbers assigned to tank and piping models are entered in the shaded columns. DO NOT have to be supplied. Tank and piping model codes are on the CBS instruction sheet provided.</div>			(3) Tank Location	(4) Status	(5) Installation or Permanent Closure Date (Month/Day/Year)	(6) Capacity (Gallons)	(7) Tank Type	(8) Tank Internal Protection	(9) Tank External Protection	(10) Secondary Containment	(11) Tank Leak Detection	(12) Tank Overfill Prevention	(13) Spill Prevention	(14) Piping Location	(15) Piping Type	(16) Piping External Protection	(17) Piping Secondary Containment	(18) Piping Leak Detection	(19) Hazardous Substance Name (List all Part 597 Substances, if more than 3 please list on separate sheet)	(20) CAS Number	(21) % of Haz Sub	(22) Tank Fee \$				
	Tank Model	Piping Model	Tank Number																								
3				10	3	1	1/1/1945	10,000	01	00	01	03	01	06	02	04	02	01	01	01	01	04	XYLENE (MIXED)	1330-20-7	3	125.	
				51	3	1	10/1/1990	5,000	01	00	01	03	01	06	02	04	02	01	01	01	01	04	XYLENE (MIXED)	1330-20-7	17	125.	
				52	6	5	12/1/1990	4,000	01	00	01		03	03	05	01	02	02	01	01	01	01	04	XYLENE (MIXED)	1330-20-7	17	—
				54	1	1	10/1/1993	5,014	01	00	01	03	01	06	02	04	02	01	01	01	01	04	XYLENE (MIXED)	1330-20-7	17	125.	
				9	3	1	4/1/1945	10,000	01	00	01	03	01	06	02	04	02	01	01	01	01	04	XYLENE (MIXED)	1330-20-7	27	125.	

Action (1)

- Initial Listing
- Add Tank
- Close/Remove Tank
- Information Correction
- Recondition/Repair/Refine Tank

Status (4)

- In-service
- Temporarily out-of-service
- Closed-Removed
- Closed- In Place
- Tank converted to Non-Regulated use

Tank Location (3)

- Aboveground-contact w/soil
- Aboveground-contact w/impervious barrier
- Aboveground on saddles, legs, stilts, rack, or cradle
- Aboveground with 10% or more below ground
- Underground
- Underground, vaulted, with access

Tank Type (8)

- Steel/Carbon Steel/Iron
- Galvanized Steel Alloy
- Stainless Steel Alloy
- Fiberglass Coated Steel
- Steel Tank in Concrete
- Fiberglass Reinforced Plastic (FRP)
- Plastic
- Equivalent Technology
- Concrete
- Urethane Clad Steel
- Other-please list:*

Internal Protection (9)

- None
- Epoxy Liner
- Rubber Liner
- Fiberglass Liner (FRP)
- Glass Liner
- Other-please list:*

External Protection (10/18)

- None
- Painted/Asphalt Coating
- Original Sacrificial Anode
- Original Impressed Current
- Fiberglass
- Jacketed
- Wrapped (Piping)
- Retrofitted Sacrificial Anode
- Retrofitted Impressed Current
- Urethane
- Other-please list:*

Tank Leak Detection (12)

- None
- Interstitial Electronic Monitoring
- Interstitial Manual Monitoring
- Vapor Well
- Groundwater Well
- In-Tank System (AutoTankGauge)
- Impervious Barrier/Concrete Pad (Aboveground Only)
- Other-please list:*

Piping Type (17)

- None
- Steel/Carbon Steel/Iron
- Galvanized Steel
- Stainless Steel Alloy
- Fiberglass Coated Steel
- Steel Encased in Concrete
- Fiberglass Reinforced Plastic (FRP)
- Plastic
- Equivalent Technology
- Concrete
- Copper
- Flexible Piping
- Other-please list:*

Overfill Prevention (13)

- None
- Float Vent Valve
- High Level Alarm
- Automatic Shut-off
- Product Level Gauge (Aboveground Only)
- Vent Whistle
- Other-please list:*

Secondary Containment (11/19)

- None
- Diking (Aboveground Only)
- Vault (w/access)
- Vault (w/o access)
- Double-Walled (Underground Only)
- Synthetic Liner
- Remote Impounding Area
- Excavation/Trench Liner System
- Flexible Internal Liner (Bladder)
- Modified Double-Walled (Aboveground Only)
- Impervious Underlayment
- Double Bottom (Aboveground Only)
- Other-please list:*

Soil Prevention (14)

- None
- Catch Basin
- Transfer Station Containment
- Other - Please list*

Piping Location (16)

- No Piping
- Aboveground
- Underground/On-ground
- Aboveground/Underground Combination
- Other-please list:*

Pipe Leak Detection (20)

- None
- Interstitial Electronic Monitoring
- Interstitial Manual Monitoring
- Vapor Well
- Groundwater Well
- Pressurized Piping Leak Detector
- Tank Top Sump (Piping)
- Exempt Suction Piping
- Other-please list:*

* If other, please list on a separate sheet including Tank Number

MOTIVA ENTERPRISES LLC
P.O. BOX 4913
HOUSTON, TX 77210

SHL01-000042-10130414-C9090-M000047
NEW YORK STATE DEPT OF
ENVIRONMENTAL CONSERVATION
625 BROADWAY 14TH FL
ALBANY, NY 12233-5500

CHECK NO.: 5000012507
COMPANY CODE: 0001
CHECK DATE: 10/13/2010
CLIENT NO.: 0005438016

Page 1 of 1

INVOICE NO.	INV. DATE	REFERENCE	DESCRIPTION	DISC. AMOUNT	NET AMOUNT
50386	10/11/2010	3019080997	FRANK SIGNORIELLO,BROOKLYN BULK S	\$0.00	\$500.00
				TOTAL:	\$500.00

Direct all inquiries to: APHOTLINE@SHELL.COM; 1-877-395-8031
We invite you to convert to electronic payments in the form of ACH.
Please contact us at the above address/phone number for further details.

DETACH AND RETAIN THIS STUB FOR YOUR RECORDS.

MOTIVA ENTERPRISES LLC
P.O. BOX 4913
HOUSTON, TX 77210

82-20
311

Check No.:5000012507

10/13/2010

PAY TO THE
ORDER OF

NEW YORK STATE DEPT OF
ENVIRONMENTAL CONSERVATION
625 BROADWAY 14TH FL
ALBANY, NY 12233-5500

*****\$500.00

NOT VALID AFTER 180 DAYS

Five hundred and 00/100 Dollars

CITIBANK N.A.
ONE PENNS WAY, NEW CASTLE, DE 19720

Wanda J. Stevens
AUTHORIZED SIGNATURE
James B. Castle
AUTHORIZED SIGNATURE

⑈ 50000 1 250 7 ⑈ ⑈ 0 3 1 100 20 9 ⑈ 38 70 20 16 ⑈

Shell/Motiva 0009226

MOTIVA ENTERPRISES LLC – BROOKLYN TERMINAL

SPILL PREVENTION REPORT

SECTION 1: GENERAL INFORMATION

This Spill Prevention Report (SPR) has been prepared to meet the requirements of 6NYCRR 598.1(k)(1). Motiva Enterprise LLC (Motiva) has prepared and continually updates as needed an Integrated Contingency Plan/Facility Response Plan (ICP) which includes the required elements of the Spill Prevention Plan. The ICP is designed to meet the requirements of the many, often overlapping plans, that the terminal maintains in accordance with applicable Federal, State and Local regulations. The ICP has been submitted to the EPA, Coast Guard and NYSDEC for review and approval and periodic updates are provided to these agencies. This SPR is incorporated by reference into the ICP, therefore select sections of the ICP are provided here to meet the requirements of the SPR. The entire ICP is on file at the NYSDEC and available for review in support of this Chemical Bulk Storage Permit Renewal Application

Facility Name: Motiva Enterprises LLC – Brooklyn Terminal
25 Paidge Avenue
Brooklyn, New York 11222-1281
Phone: 718-383-4066
Fax: 718-383-7970

CBS No. 2-000209

Major Onshore Facility License No. 2-1540

DEC SPDES No. NY-0006131

Description of Operations

- The facility stores gasoline, fuel grade ethanol and gasoline additives.
- The facility has a total storage capacity of 55,971 Bbls with an average storage volume of 38,000 to 42,000 Bbls. Daily throughput is approximately 17,000 Bbls across a six bay truck loading rack.
- All products are received through three methods: via pipeline, barge, and truck.
- Gasoline additives are received by truck.

Products Handled

- Gasoline
- Fuel Grade Ethanol
- Gasoline Additives

Required Response and Operating Plans

The plans listed below are maintained by the Brooklyn Terminal and are available on-site at all times for reference and use by terminal personnel:

- Spill Prevention Control and Countermeasure (SPCC) Plan (40 CFR 112)
- US Coast Guard Dock Operations Manual (33 CFR 151, 154, 155 and 156)
- Site Plan Information (included in the ICP)
- Description of Spills (list is included in the ICP along with the Oil Spill Contingency Plan)
All spills are document on Motiva HSSE Forms and kept on file at the terminal.
NOTE: There have been no spills at the terminal in the past 5 years.
- Environmental Compliance Report (a copy of the most recent report is attached)
- Secondary Containment Inspection Report (reports kept on file at the terminal)
- Inspection Records for Aboveground Storage Tanks (reports are kept on file at the terminal)

Facility Changes/New Equipment/Engineering Plans

In 2010 the truck loading rack canopy was replaced with a larger canopy to provide greater control of storm water in the truck loading area. New curbing, drains, and piping were installed to convey the flow of water under the rack to an underground tank for temporary storage. The new arrangement also increased the storage capacity of the drainage system. As part of this project, the SPCC Plan for the facility was updated and certified by a New York State Licensed Professional Engineer. A copy of the SPCC plan, containment calculations and PE Certification are included in this report. Engineering plans are available for review at the terminal.

SECTION 2: SUMMARY OF RELEASES

Description of Spills, Discharges and Response Actions

There have been no spills at the terminal in the last five years. If a spill occurs, a description of the incident is documented in the facilities ICP. Additionally, all spill incidents are documented on a Motiva HSE Report form as required by Motiva's procedures.

SECTION 3: STATUS REPORT ON COMPLIANCE & SPILL PREVENTION PREPAREDNESS

New York State Chemical Bulk Storage Inspection Report

A CBS self-inspection was performed by Motiva personnel and the form is attached to this report.

SECTION 4: PERIODIC EQUIPMENT INSPECTION RECORDS

Annual and five year tank inspection reports prepared by outside contractors are kept on file at the terminal and are available for review. Monthly and daily inspections are performed by terminal operators and the inspection forms are kept on file and are available for review at the terminal.

SECTION 5: FINANCIAL RESPONSIBILITY

Motiva will provide evidence of financial responsibility upon request.

SECTION 6: SPILL RESPONSE PLAN

Motiva maintains an Integrated Contingency Plan/Facility Response plan at the terminal. The ICP contain the following:

- Spill reporting procedures
- Material safety data sheets for all products stored on site
- Identification and evaluation of potential spill hazards
- Initial response and containment procedures
- A prediction of the flow of a release and a site drainage map
- Maps of nearby environmental sensitive areas
- A list of spill response contractors contracted by Motiva
- Name and contact numbers for the qualified individual and two alternate qualified individuals
- Training requirements for employees
- Records of annual drills
- Security measures (A facility Security Plan is also available at the terminal)

Excerpts of the ICP are attached.

SECTION 7: DISCUSSION AND ASSESSMENT OF EQUIVALENT EQUIPMENT, METHOD OR PRACTICE

This section is not applicable to the Motiva Brooklyn Terminal.

SECTION 8: SITE ASSESSMENT AND FINDINGS

In response to historic impact to soil and groundwater at the terminal, Motiva entered into a Stipulation Agreement with the NYSDEC and completed an assessment of soil and groundwater conditions across the site. A groundwater remediation system was installed and operated in the 1990s and removed in 2007. Monthly gauging and annual groundwater sampling is performed at the site.

SECTION 9: WRITTEN PROCEDURES TO PREVENT THE MIXING OF INCOMPATIBLE SUBSTANCES

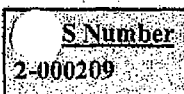
Written procedures for handling of product are included in the Terminal Operation Manual which is available for review at the terminal.

SECTION 10: CONSENSUS CODES

Motiva uses industry standards for maintenance and installation of tanks and piping at the Brooklyn Terminal.

ATTACHMENT 1

REGISTRATION APPLICATION AND RECERTIFICATION



New York State Department of Environmental Conservation

CHEMICAL BULK STORAGE CERTIFICATE

625 Broadway, 11th Floor, Albany, NY 12233-7020 Phone: 518-402-9553

Region 2

One Hunters Point Plaza, 15th Floor
47-40 21st Street, L.I. City, NY 11101-6454
(718) 482-6454

TANK NUMBER	DATE INSTALLED	TANK LOCATION AND TYPE	CAPACITY (GALLONS)	HAZARDOUS SUBSTANCE	% HAZ SUBST	CHEMICAL ABSTRACT #
10	01/01/1945	AST - Steel/Carbon Steel/Iron	10,000	XYLENE (MIXED)	3.00	1330-20-7
51	10/01/1990	AST - Steel/Carbon Steel/Iron	5,000	XYLENE (MIXED)	17.00	1330-20-7
52	12/01/1990	AST - Steel/Carbon Steel/Iron	4,000	XYLENE (MIXED)	17.00	1330-20-7
54	10/01/1993	AST - Steel/Carbon Steel/Iron	5,014	XYLENE (MIXED)	17.00	1330-20-7
9	04/01/1945	AST - Steel/Carbon Steel/Iron	10,000	XYLENE (MIXED)	27.00	1330-20-7

OWNER:

MOTIVA ENTERPRISES, LLC
1100 LOUISIANA STREET, SUITE 2200
HOUSTON, TX 77002

SITE:

MOTIVA ENTERPRISES LLC
25 PAIDGE AVENUE
BROOKLYN, NY 11222OPERATOR: MOTIVA ENTERPRISES LLC
(718) 383-4066

EMERGENCY JAMES W. LINTZ

CONTACT: (718) 383-4066

ISSUED BY: Commissioner
Alexander B. Grannis

CBS NUMBER: 2-000209

DATE ISSUED: 11/03/2008

EXPIRATION DATE: 11/30/2010

FEE PAID: \$ 625.00

MAILING CORRESPONDENCE:

JAMES W. LINTZ
MOTIVA ENTERPRISES LLC
25 PAIDGE AVENUE
BROOKLYN, NY 11222

As an authorized representative of the above named facility, I hereby certify that the information on this form is true and correct. Additionally, I recognize that I am responsible for assuring that this facility is in compliance with all sections of ECL Article 40 and 6 NYCRR Parts 595, 596, 597, 598, and 599, not just those cited below:

- The facility must be re-registered if there is a transfer of ownership.
- The facility has maintained its requirements relating to daily, monthly, annual and five year inspections as required by Part 598.7 and has its SPR annually updated as required by Part 598.1(k).
- The Department must be notified within 3 business days prior to adding, replacing, reconditioning, or permanently closing a stationary tank.
- This certificate must be signed and posted on the premises at all times. Posting must be at the tank, at the entrance of the facility, or the main office where the storage tanks are located.
- Any person with knowledge of a spill, leak or discharge must report the incident to DEC within two hours (1-800-457-7362).

Signature of Representative/ Owner

Date

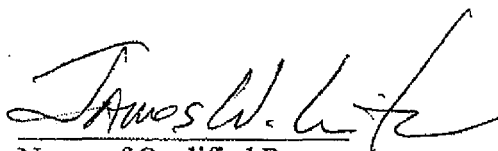
James W. Lintz, Metropolitan Complex Mgr.
Name and Title of Authorized Representative/Owner (Please Print)

ATTACHMENT 2


SPILL PREVENTION REPORT (SPR) CERTIFICATION

I certify that I have acquired, through education and/or related practical experience, knowledge of the physical sciences, technology and principles of storing and handling hazardous substances as it relates to this facility.

I have examined the facility, and being familiar with the provisions of 6 NYCRR Parts 595, 596, 597, 598, and 599, attest that this spill prevention report has been prepared in accordance with requirements therein.



Name of Qualified Person



Signature of Qualified Person

Date: 10-20-2010

ATTACHMENT 3

**SAMPLE
COMPLIANCE STATUS CHECKLIST**

NEW YORK STATE CHEMICAL BULK STORAGE INSPECTION REPORT

Rev. 8/28/06
Cbscklst 2005

CBS# 2 -000 209 or ☐ Unregistered Inspection number _____ Date 10/20/2010

Site Name <u>Motiva Enterprises LLC - Brooklyn Terminal</u> Site Address <u>25 Paidge Ave, Brooklyn, NY 11222-1281</u> Site Contact <u>Frank Signoriello</u> Phone Number <u>718-383-4066, ext 12</u> Fax Number <u>718-383-7970</u> Email Address <u>Frank.Signoriello@Motivaent.com</u>	Owner Name <u>Motiva Enterprises LLC</u> Owner Address <u>1100 Louisiana St, Ste 2200</u> <u>Houston, TX 77002</u> Owner Contact <u>James Lintz</u> Phone Number <u>718-383-4066</u> Fax Number <u>718-383-7970</u> Email Address <u>James.Lintz@Motivaent.com</u>
--	--

1. Visitor parking 2. Centroid

of site **Map Datum**

GIS: E _____ N _____ **Location** 3. At AST 4. At UST 5. Main Gate ☒ NAD83

SITE Representative James Lintz, Frank Signoriello

NYSDEC Inspector Self-assessment

I. GENERAL

	YES	NO	X
1. All regulated tanks at this site are registered [§596.2(a)]?	Y		
2. Is the registration certificate posted at the facility [§596.2(g)]?	Y		
3. Is registration information current & correct [§596.2(f)]?	Tank 52 should be removed		

II. SPILL PREVENTION REPORT (SPR)

	YES	NO	X
A. Preparation of the SPR			
4. Does facility have an SPR [§598.1(k)(1)]? Y/N Date: _____	Incorporated in ICP, last update 10/2010		
5. Has SPR been updated annually or Whenever a significant release occurred or When a substantial modification was made. Y/N/X	Y		
6. Does the SPR contains a copy of current registration application & certificate. [§598.1(k)(2)(i)]? Y/N	Y		
7. Current approval of management [§598.1(k)(2)(ii)]? Y/N	Y		
8. Current site map [§598.1(k)(2)(iii)]? Locate/identify tanks, transfer stations, connecting piping Y/N	Y		
9. Preparer's name and signature [§598.1(k)(2)(iv)]? Y/N	Y		
10. Listing and description of spills for past 5 years [§598.1(k)(2)(v)]? Y/N	Y		
11. An assessment of causes of spills, leaks, and releases for past 5 years §598.1(k)(2)(vi)]? Y/N	NA NO SPILLS IN 5 YRS		
12. SPR contain a spill response plan [§598.1(k)(2)(x)]? Y/N/1 (incomplete)	Y in ICP		
B. Periodic Inspections of Tank/Piping and Record keeping §598.1(k)(2)(viii) , §598.6 & §598.8]			
13. Is weekly monitoring performed between the tank/pipe and the secondary containment system for: a. UST [; §598.6(b)(2)]? Y/N/X	NA no USTS		

b. Underground piping [§599.15(b); §598.6(c)(1); §598.5(a)]? Can be in combination with: inventory with annual tightness test; vapor wells; gw wells; auto tank gauging; equiv. Y/N/X	NA no underground piping		
14. UST Systems - Monthly Inspections Monthly visual is performed [§598.6(a)(1)]? Y/N/X/1 (records not retained for 10 yrs §598.8(a))/2 (report signed, dated, certified §598.8(b))/3 (records not in SPR)/4(operability)	NA no USTS		
15. AST Monthly (≥10% volume beneath ground) [§598.7(b)] a. Aboveground tank - Monthly leak detection is performed [§598.7(b)]? Y/N/X/1 (records not retained for 10 yrs §598.8(a))/2 (report signed, dated, certified §598.8(b)/3 (records not in SPR)	Y records on file at terminal		
b. Underground piping - Monthly leak detection is performed [§598.6(c); §598.7(b); §599.15(b)]? Y/N/1 (records not retained for 10 yrs §598.8(a))/2 (report signed, dated, certified §598.8(b)/3 (records not in SPR)	NA no underground piping		
16. UST Systems - Annual Inspections [§598.6(a)(2)] Date: _____ a. Automatic Line Leak Detector? Y/N(not performed)/1(no records in SPR)/2(records not retained 5 yrs)/3(no cert.)/4(not operational)	NA no USTS		
b. Cathodic Protection System for Tanks? Y/N(X(not performed))/1(no records in SPR)/2(records not retained 5 yrs)/3(no cert.)/4(not maintained to achieve protection)	NA no USTS		
c. Cathodic Protection System for Piping? Y/N(not performed)/1(no records in SPR)/2(records not retained 5 yrs)/3(no cert.)/4(not maintained to achieve protection)	NA no underground piping		
17. AST Systems - Annual Inspections [§598.7] Date Completed: <u>10/20/2010</u> a. Aboveground Tank- (1) Visual inspections performed [§598.7(c)(2)]? Y/N/1 (records not in SPR)	Y		
(2) For tank subject to corrosion, cathodic protection system is inspected by qualified technician and is maintained to achieve protection [§598.7(c)(1); §598.8(a); §598.8(b) & §598.9]? Y/N (not performed)/X(not in contact with soil)/1(no records in SPR)/2 (records not retained 5 yrs)/3 (no cert.)/4 (not maintained to achieve protection)	Not in contact with soil		
b. Aboveground Piping - (1) Visual inspections performed [§598.7(c)(2)]? Y/N/1 (records not in SPR)	Y		
(2) For piping subject to corrosion, cathodic protection system is inspected by qualified technician and is maintained to achieve protection [§598.7(c)(1); §598.8(a); §598.8(b) & §598.9]? Y/N(not performed)/X(not in contact with soil)/1 (no records in SPR)/2 (records not retained 5 yrs)/3 (no cert.)/4 (not maintained to achieve protection)	Not in contact with soil; entire terminal system is inspected annually		
18. AST Systems - 5-year Inspections [§598.7(d)] Date: <u>10/1/08</u> Aboveground tanks and piping must undergo a 5-year inspection in accordance with a consensus code, standard, or practice. An assessment & evaluation must be made of structural soundness, system tightness, corrosion, wear, foundation weakness & operability. Reports are dated, signed, & certified [§598.8(b)] & records are maintained for 10-year period [§598.8(a)]. For tanks > 10,000 gal, the inspection is certified by a NYS-licensed professional engineer. The remaining life expectancy must be determined. a. Aboveground tanks? Y/N/X/1 (not in accordance with code)/2 (no assessment)/3 (no cert)/4 (records not retained 10 yrs)/5 (no cert. for tank > 10,000 g)/6 (records not in SPR)	5 yr Tank inspection reports on file at terminal		
b. Aboveground piping? Y/N/X/1(not in accordance with code)/2(no assessment)/3(no cert)/4(records not retained 10 yrs)/5 (records not in SPR)	Y		

19. UST Inspection - Reconditioned Tanks With Liners [§598.6(d)]? Y/N (not inspected internally)/X/ 1 (not performing to design specs)/ 2 (no assessment)/ 3 (no cert.)/ 4 (records not retained)/ 5 (records not in SPR)	NA no USTs		
20. Facility report on status of compliance [§598.1(k)(2)(vii)]?	Inspection reports		
C. Tank & Piping Certifications (Apply to tanks installed on or after 2/11/95) 21. Does the SPR contain a certification statement for design and installation of tank and piping systems - a. USTs [§599.6(g)(4)& (5)]? Y/N/ X (no USTs)/1 (record not available)/2 (no records for 5 yrs)/3 (records not in SPR)	NA tanks installed prior to 1995 X, no USTs		
b. ASTs [§599.11(f)(4) & (5)]? Y/N/ X (no ASTs)/1 (record not available)/2 (no records for 5 yrs)/3 (records not in SPR)	NA tanks installed prior to 1995		
c. Piping [§599.16(e)(3)&(4)]? Y/N/1 (record not available)/2 (no records for 5 yrs)/3 (records not in SPR)	NA tanks installed prior to 1995		
D. Life Expectancy/Warranty 22. UST secondary containment liner - liner life expectancy is specified in the SPR [§599.4(d)]? Y/N/X	NA		
23. Useful life for UST tank design, if < 30 years, is specified in the SPR [§599.3(c)(1)]? Y/N/X	NA		
24. Useful life for AST tank design, if < 30 years, is specified in the SPR [§599.8(b)(1)]? Y/N/X	NA		
25. Piping life expectancy is specified in the SPR? [§599.13(a)(1)]? Y/N	NA		
E. Additional Requirements			
26. Are rupture disks replaced			
a. Every 3 years, Y/N (no option selected)/X			
b. According to manufacturer's guidelines, Y/N (no option selected)/X			
c. On the basis of operating experience [§598.9(f)]?Y/N (no option selected)/X	Y		
27. Does SPR contain a site assessment for UST, or AST with ≥10% volume beneath ground, for { closure [§598.10(e)] }; { change-in-service [§598.10(a)(2)] } or { when directed by the department [§598.1(g)(3)] } Y/N/X (not applicable)/1 (inadequate)/2 (not in SPR §598.1(k)(4) & §598.10(e)(4))	NA, no USTs		
28. If facility have written procedures to prevent deliveries to the wrong tank, are they referenced in SPR [§598.4(b)(7)]? Y/N/X (single tank with no other fill ports, or facility has mated connections)	X, in Terminal Operation Manual		

III. TRANSFER STATIONS & HAZARDOUS SUBSTANCE TRANSFERS

YES NO X

29. Transfer station [§599.17(c)(2)]: Transfer stations must have a permanently installed secondary containment system. Containment system must have an acceptable spill containment volume; satisfy permeability to substance stored; constructed, coated, or lined with materials that are compatible with substance stored; and equipped with a sump and manually-controlled drainage system (must be locked closed). Y/X/N (no containment)/ 1 (not perm. installed)/ 2 (unacceptable cont. vol.)/ 3 (permeable)/ 4(not maintained)/5 (incompatible)/ 6 (no sump or lockable drainage valve)	Y		
To prevent mixing of incompatible substances: [§598.4(b)(7)] 30. Does the facility have written site procedures in SPR to prevent delivery to the wrong tank, fill ports with mated connections? Y/N/X (have written procedures, or facility has single tank of any type)	X, Terminal Operation Manual		

31. Are remote fill/dispensing ports properly labeled at point of delivery. [§ 598.4(b)(8), 599.17(b)(1)(ii), 596.2(h)]? Tank ID#, chemical or common name, hazard warning, (for USTs - design & working capacities are required in addition) Y/N	X		
32. Valves for filling/emptying a tank are properly labeled for closed/open positions [§598.4(b)(8)]? Y/N	X		
Storage of Solids and Non-Stationary Tanks:			
33. Are water soluble solids stored in non-stationary tanks and protected from stormwater [§598.5(f)]? Y/N/X/1 (floor is permeable)/ 2 (no enclosure or container does not prevent entry of stormwater)	NA		
34. Do non-stationary tanks satisfy performance standards [§598.5(g)]: Y/N/X/1 (proximity)/2 (enclosure for water reactive)/3 (impervious floor, curb, 110% permeability)/4 (NSTs satisfy consensus code)/5 (stored in stable position)/6 (labeling & inventory records)	NA		

IV. ABOVEGROUND STORAGE TANKS/PIPING

	9	10	51	54				
Aboveground Storage Tanks								
* For tanks installed prior to 02/11/95, items marked with an asterisk are recommended but are NOT required until the tank system undergoes substantial modification								
Tank Volume if different than registered	10,000	10,000	5,000	5,000				
Date Installed	1960	1960	1970	1970				
35. Are daily visual inspections performed on AST systems [§598.7(a)]? Y/N	Y	Y	Y	Y				
36. Are temporarily out-of-service tanks (>30 days) properly closed [§598.10(b)]? Y/N/X	X	X	X	X				
37. Are permanently out-of-service tanks properly closed [§598.10(c)]? Y/N/X	X	X	X	X				
38. Protected against scouring [§599.8(a)]? Y/N/X	Y	Y	Y	Y				
39. Tanks subject to melting are protected against fire [§599.8(c)]? Y/N/X	X	X	X	X				
40. Tank bottoms resting on soil are cathodically protected [§599.8(d)]? Y/N/X/1 (improper design)/2 (not insulated from piping)/3 (not isolated from stray current)	X	X	X	X				
41. Tank ≥ 5,000 gallons has a manway [§599.8(e)]? Y/N/X	Y	Y	Y	Y				
42. Exterior surfaces are corrosion protected (painted) [§598.9(e) & §599.8(f)]? Y/N/X	Y	Y	Y	Y				
43.*For tank bottoms resting on ground, tank is equipped with double bottom or impervious barrier[§599.8(g)]? Y/N/X("old tanks")	X	X	X	X				
44. Tanks are protected from explosion [§599.8(h)]? Y/N	Y	Y	Y	Y				
45.*Does tank have leak monitoring between bottom and secondary containment. [§599.10(a)]? Y/N/X("old tanks")	X	X	X	X				
46. High level alarm, high-level trip, or automatic bypass to overflow tank is installed [§598.5(b); §599.17(b)(1)(i)]? Y/N/1 (not visible/audible at remote fill port)/ 2 (not operational)	Y	Y	Y	Y				

	9	10	51	54				
47. Level gauge [§599.17(b)(1)(iii)]								
a. If a remote fill is present, is there a level gauge & flow control at remote fill port? Y (has both) / N (neither) / X/ 1 (no gauge)/2 (gauge not operational)/3 (no flow control)/ 4 (flow control not operational)	Y	Y	Y	Y				
b. If no remote fill port, is there a level gauge at the AST? Y (has gauge or tank is translucent)/ N/ 1(not operational)								
48. Vacuum and over pressurization [§599.18]?								
a. Vacuum and over pressurization equipment installed? Y/N	Y	Y	Y	Y				
b. Relief valves (safety, pressure, & vacuum) are properly labeled [§599.18(d)]? Y/N/X	Y	Y	Y	Y				
49. Secondary Containment [§598.5(c) & §599.9].								
a. Tank has secondary containment? Y/N	Y	Y	Y	Y				
b. Spill containment volume is 110%? Y/N	Y	Y	Y	Y				
c. Construction satisfies permeability of 1×10^{-6} cm/sec to substance stored? Y/N	Y	Y	Y	Y				
d. Constructed, coated, or lined with materials that are compatible? Y/N	Y	Y	Y	Y				
e. Equipped with a sump and a drainage system which is manually-controlled from outside the diked area? Y/N	Y	Y	Y	Y				
f. Is gravity drainage system valve locked closed? Y/N/X	Y	Y	Y	Y				
50. Valves for filling/emptying a tank are properly labeled for closed/open positions [§598.4(b)(8)]? Y/N	Y	Y	Y	Y				
51. AST tank properly labeled [§596.2(h); §599.17(b)(1)(iii)]? Tank ID #; chemical or common name; total cap./working cap.; hazard signs/NYSUFP&BC. Y/N	Y	Y	Y	Y				
Aboveground Piping Systems								
52. Are aboveground tanks/piping protected from atmospheric corrosion [§598.9(e)] & §599.13(c)(1)? Corrosion resistant eq; non-metallic cladding; paint; equivalent. Y/N (not corrosion protected)	Y	Y	Y	Y				
53. Does aboveground piping > 2" diameter have welded or flanged connections, or is constructed of plastic-lined metal piping with flared-end connections [§599.13(c)]? Y/N/X	Y	Y	Y	Y				
54. Piping in contact with soil is protected from corrosion [§599.13(b)] Y/N/X/1 (improper design)/2 (not isolated from tank)/3 (not isolated	X	X	X	X				
55. Automatic line leak detector for pressurized underground and on-ground piping [§598.6(c)(2)][§599.15(a)]?								
a. Is piping equipped with automatic line leak detector? Y/N/X	X	X	X	X				
b. Is the leak detection system operable [§598.6(c)(2)]? Y/N/X	X	X	X	X				
56.* Piping installed after Feb. 11, 1995 is properly labeled [§599.13(c)(4)]? Chemical name & placement at valves, pumps, switches, each side of wall, & each end of pipe. Y/N/X	X	X	X	X				
Pumps/valves are protected from leaks [§598.5(e)] using:								
57. Sealless or double seal pumps and valves OR Y/N/X								

58. Pump/valve maintenance program, OR Y/N/X									
59. Pump/valves have secondary containment. Y/N/X / 1(permeable) /2(compatible)	Y	Y	Y	Y					
Valves/Couplings Used in Transfers [§599.17(b)(2)]:									
60. Valves/couplings are located within transfer station? Y/N/X	Y	Y	Y	Y					
61. Dry disconnect valve provided on fill line? Y/N/X	Y	Y	Y	Y					
62. Check valve provided on fill line? Y/N/X	Y	Y	Y	Y					
63. Control valve provided for each tank connection through which hazardous substances flows? Y/N	Y	Y	Y	Y					

V. UNDERGROUND STORAGE TANKS/PIPING

Tank Volume if different than registered									
Date Installed									
64. Are vapor and groundwater monitoring wells labeled "Monitoring Well" or "Test Well - No Fill" & equipped with a locking cap? [§598.6(b)(3&4)] Y/X/1 (not labeled)/2 (not equipped or not locked)									
65. Are temporarily out-of-service tanks (>30 days) properly closed [§598.10(b)]? Y/N/X									
66. Are permanently out-of-service tanks properly closed [§598.10(c)]? Y/N/X									
67. Are USTs properly labeled [§599.3(a) & §596.2(h)]? Y/N/X									
68. Is UST protected against scouring [§599.3(b)]? Y/N/X									
69. Is UST protected against corrosion [§599.3(d)]? Y/N/X/1 (improper design)/									
70. Secondary containment [§598.5(a) & §599.4]?									
a. Tank has secondary containment? Double wall; vault; liner; or equiv. Y/N									
b. Construction satisfies permeability of 1×10^{-6} cm/sec to substance stored? Y/N									
c. Designed, installed, & operated to prevent Allow release to environment? Y/N									

d. Allows for detection & collection of releases or spills until material is removed? Y/N										
e. Constructed of, or lined with, materials compatible with substance stored and having sufficient strength & thickness to prevent failure? Y/N										
f. Foundation suitable to prevent failure due to settlement, compression, & uplift? Y/N										
71. Does tank have leak monitoring §598.6 (b)(2)]?,[§599.5]? Y/N (not installed)/										
72. High level alarm, high-level trip, or automatic bypass to overflow tank is installed [§599.17(b)(1)(1)]? Y/N/1 (not visible/audible at remote fill port)/ 2(operational)										
73. Vacuum and over pressurization [§599.18]? a. Vacuum and over pressurization equipment installed? Y/N										
b. Relief valves (safety, pressure, & vacuum) are properly labeled [§599.18(d)]? Y/N										
74. Valves for filling/emptying a tank are properly labeled for closed/open positions [§598.4(b)(8)]? Y/N										

<u>If no on-ground or underground piping, inspection is COMPLETED.</u>										
<u>On-Ground/Underground Piping:</u>										
75. Secondary Containment [§599.14]										
a. Piping has secondary containment? Double wall, vault, or liner Y/N/X										
b. Construction satisfies permeability of 1×10^{-6} cm/sec to sub. stored? Y/N										
c. Designed, installed, and operated to prevent release to environment? Y/N										
d. Allows for detection and collection of releases or spills until material is removed? Y/N										
e. Constructed of, or lined with, materials compatible with substance stored and having sufficient strength & thickness to prevent failure? Y/N										
f. Foundation suitable to prevent failure due to settlement, compression, and uplift? Y/N										
g. Sloped and operated to remove liquids resulting from leaks, spills, precipitation? Y/N										
76. Automatic line leak detector for pressurized underground and on-ground piping [§599.15(a)]?										
a. Is piping equipped with automatic line leak detector? Y/N/X										
b. Is the leak detection system operable? Y/N/X										
77. Leak detection systems for piping -										
a. Is piping equipped with a leak detection system [§599.15(b)]? Y/N										
b. Is the leak detection system operable [§599.14(a)(2)(vii)]? Y/N										
78. Piping in contact with soil is protected from corrosion [§599.13(b)] Y/N/X/1 (improper design)/2 (not isolated from tank)/3 (not isolated from stray current)										

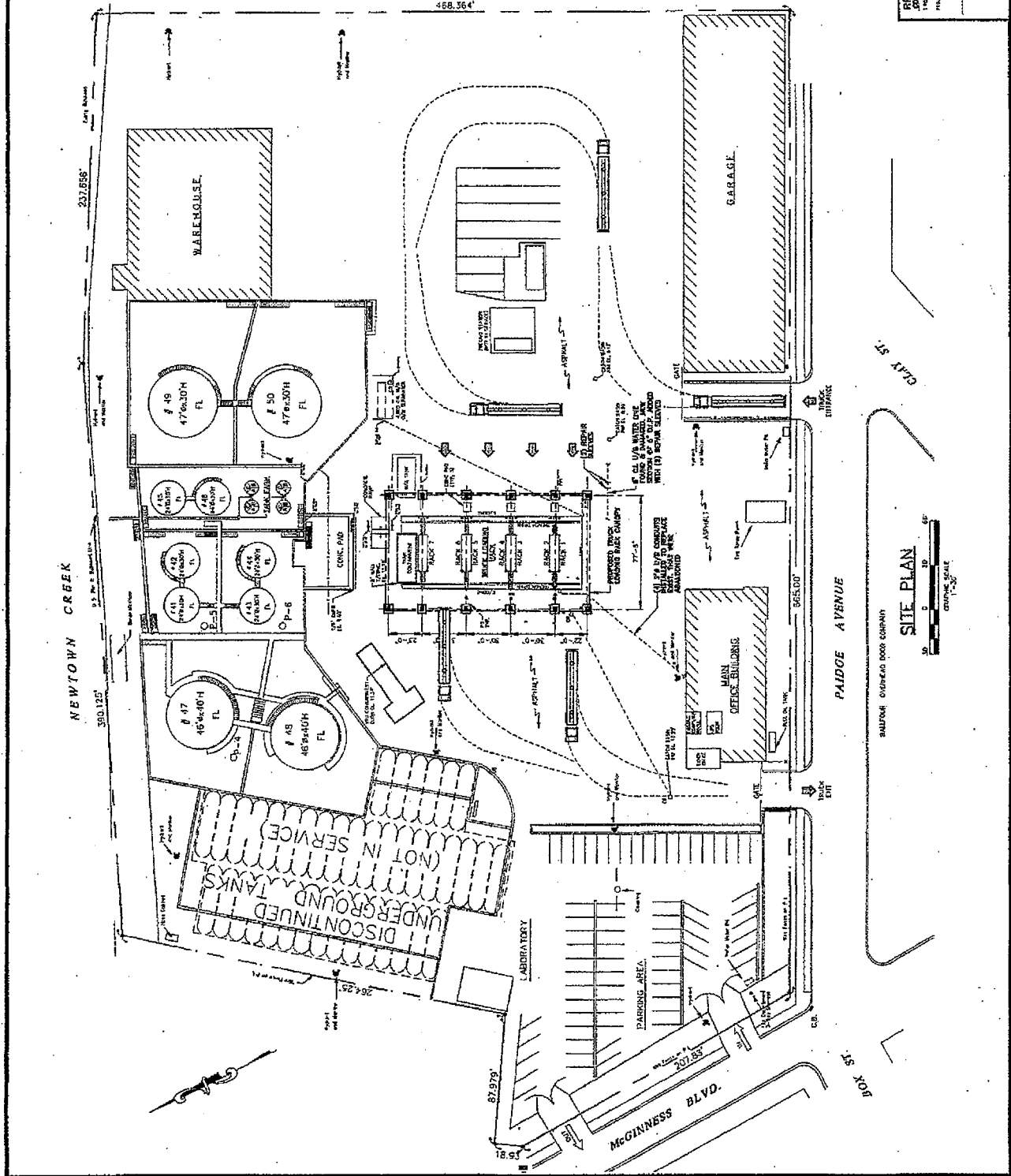
Y=Yes N=No X=Not Applicable Transfer Stations #29 AST #35 AG PIPING #52 UST #64

NOTES:



— SITE LOCATION
LOCATION MAP
SCALE 1" = 1/2 MI.

WILLIAMSBURG STEEL COMPANY

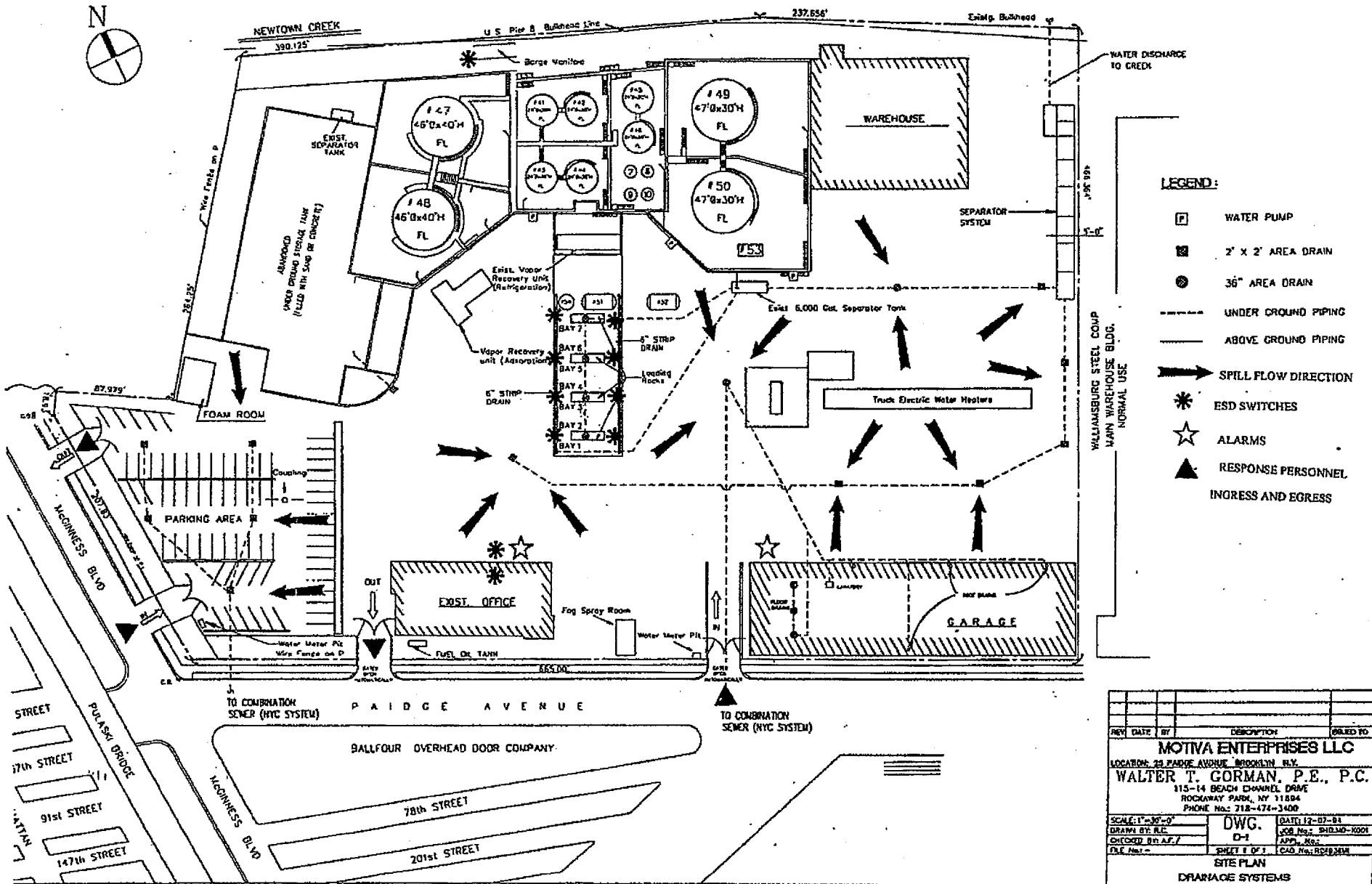


MOTIVA		BRIDGEVIEW, N.Y.	
ENTERPRISES		TRUCK LOADING RACK	
PROPOSED CANOPY RENOVATION		SITE PLAN	
DATE	10/25/83	SCALE	1" = 1/2 MI.
BY	J.M.	PROJECT NO.	C-001.02
CHECKED BY	J.M.	DATE	10/25/83
APPROVED BY	J.M.	DATE	10/25/83
DESIGNED BY	J.M.	DATE	10/25/83
DRAWN BY	J.M.	DATE	10/25/83
NOTED BY	J.M.	DATE	10/25/83
REVISIONS			
NO.	1	DATE	10/25/83
DESCRIPTION	REVISION		
1	REVISION		
2	REVISION		
3	REVISION		
4	REVISION		
5	REVISION		
6	REVISION		
7	REVISION		
8	REVISION		
9	REVISION		
10	REVISION		

PREPARED BY		DESIGNED BY	
J.M.		J.M.	
CHECKED BY		APPROVED BY	
J.M.		J.M.	
DATE		DATE	
10/25/83		10/25/83	
PROJECT NO.		SCALE	
C-001.02		1" = 1/2 MI.	
CLIENT		DATE	
WILLIAMSBURG STEEL COMPANY		10/25/83	
LOCATION		DATE	
BRIDGEVIEW, N.Y.		10/25/83	

SITE PLAN
SCALE 1" = 1/2 MI.

SITE DRAINAGE PLAN



Shell/Motiva 0009246

DAILY CHECKLIST

MOTIVA ENTERPRISES LLC
FACILITY REGISTRATION NUMBER 2-1940
25 PAIDGE AVENUE BROOKLYN, NY 11222

DATE: / / **SHIFT:** _____

PERFORMED BY: _____

YARD	TIME	STATUS
CHECK SEPARATOR FOR OIL ACCUMULATION / CREEK FOR SHEEN		
CHECK YARD FOR UNSAFE CONDITIONS		
CHECK PERIMETER FENCING AND LIGHTING		
CHECK FOG ROOM / FOAM ROOM HEATERS AND PIPING		
DRAIN AIR COMPRESSOR YES / NO		
CHECK HAZARDOUS WASTE AREA		
FORKLIFT USED YES / NO		
COMMENTS:		

DOCK / TANK FARM 41-42-43-44-45-46-47-48-49-50-51-52-53-54-55 9/10	TIME	STATUS
CHECK ALL VALVES, PUMPS & MOTORS FOR UNSAFE CONDITIONS / LEAKS		
GAUGE TANKS, CHECK TANKS, PIPING, COUPLINGS, FLANGES FOR LEAKS		
CHECK STAIRWAYS / CROSSOVERS FOR UNSAFE CONDITIONS		
RECEIVING BARGE OR PIPELINE		
CHECK DOCK LINES FOR PRODUCT SEEPAGE, WASTE & SEWAGE		
CHECK DOCK SYSTEM FOR DISCHARGE AT CREEK		
CHECK CONTAINMENT FOR SIGNS OF DEBRIS, EROSION, CRACKS, DISCOLORATION,		
SIGNS OF SPILLED OR LEAKING PRODUCT (SIGHT, SOUND, SMELL)		
COMMENTS:		

VAPOR RECOVERY	TIME	STATUS
DRAIN VAPOR LINE EACH SHIFT		
USE CHECKLIST ONCE PER WEEK		
CHECK FOR LIQUID AND VAPOR (SIGHT, SOUND, SMELL) LEAKS, PRESSURES, UNSAFE		
CONDITIONS DURING TRUCK LOADING		
COMMENTS:		

RACKS	TIME	STATUS
CLOSEOUT		
CHECK ADDITIVE		
CHECK FOR UNSAFE CONDITIONS, LIQUID AND VAPOR LEAKS (SIGHT, SOUND, SMELL)		
DURING TRUCK LOADING		
GROUND CABLES / AIR HOSE OK / NG SCULLY SYSTEM OK / NG		
LOADING ARMS / COUPLER CONDITION OK / NG		
CHECK DRAIN VALVE UNDER RACK 7 (NORMALLY CLOSED) OPEN / CLOSE		
COMMENTS:		

NOTIFY SUPERVISOR OF ANY POOR CONDITIONS IMMEDIATELY
LEAKS DETECTED MUST BE REPORTED TO TERMINAL SUPERINTENDENT
PLEASE INSERT G = GOOD P = POOR IN STATUS

MONTHLY IN-SERVICE Tank & Secondary Containment Inspection

Date: _____

Terminal: Brooklyn

Inspected By: _____

51	52	53	54	55
yes / no	yes / no	yes / no	yes / no	yes / no

I. Foundation

- A. Is there any discoloration visible?
- B. Are there any cracks, settling gaps, vegetation roots?
- C. Is there any puddle containing spilled or leaked material?
- D. Does water drain away from the tank?
- E. Is any erosion evident?
- F. Is bottom angle free of rock and/or other debris?

O	n/a	n/a	/	n/a
O	n/a	n/a	/	n/a
S	n/a	n/a	/	n/a
O	n/a	n/a	/	n/a
O	n/a	n/a	/	n/a
S	n/a	n/a	/	n/a

Comments: _____

II. Shell

- A. Visually inspected for paint failures, pitting, drip marks, discoloration and corrosion (tank is free of defects)?
- B. Any evidence of seam seepage, cracks, bulges or indentations?

O	n/a	/	/	/
O				
S	n/a	/	/	/

Comments: _____

III. Shell Appurtenances

- A. Are there any cracks or signs of seepage on weld joints at nozzles, man ways and reinforcing plates?
- B. Is there evidence of seepage around bolts at flanges & valves?
- C. Is the visual (automatic) gauge operating properly?

O	/	/	/	/
O	/	/	/	/
S	/	/	/	/

Comments: _____

IV. Roof

- A. Visually inspected for paint failures, pitting & corrosion on roof deck (roof is free of defects)?
- B. Is there evidence of seepage around bolts at flanges and fittings?
- C. Inspected floating roof through roof hatch for: roof resting properly on liquid surface, water or product on pan, gaps between roof & shell, tears, holes or separation of seal and other roof defects (roof is free of defects)?

O	n/a	/	/	/
O	n/a	/	/	/
S	n/a	/	/	/

Comments: _____

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Shell/Motiva 00092248

V. Roof Appurtenances

- A. Have checked all hatches and vents (working properly)?
- B. Have inspected gauge well (free of debris)?
- C. Access hatches have been inspected & are free of debris, hazards or corrosion?

51	52	53	54	55
yes / no	yes / no	yes / no	yes / no	yes / no
O	n/a	/	/	/
O	n/a	/	/	/
S	n/a	/	/	/

Comments: _____

VI. Containment & Drainage Areas**A. Dike or Berm System**

- Checked level of precipitation in dike, is there capacity?
- Inspected (left closed) drainage valve to insure operation?
- Checked for debris & verified there was none evident?
- Any signs of erosion?
- Inspected dike and basin area for integrity. (No breaches)?

O	n/a	n/a	n/a	/
O	n/a	n/a	n/a	/
S	n/a	n/a	n/a	/
O	n/a	n/a	n/a	/
S	n/a	n/a	n/a	/

Comments: _____

B. Secondary Containment (steel)

- Inspected for cracks?
- Any signs of corrosion?
- Checked for discoloration?
- Is there any standing liquid?
- Inspected drainage valve condition?

n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a

Comments: _____

C. Retention and Drainage Ponds

- Checked for debris?
- Any sign of erosion or stressed vegetation?
- Checked available capacity?
- Is there any standing liquid?

n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a

Comments: _____

VII. Double Bottom Installations

- A. Opened & checked monitoring valves for liquid detection?
- Closed valves after inspections?
- B. Inspected double bottom shell wall?

n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a

C. Where cathodic protection is installed?

Inspected the test station for damage?

Is the header wire from the anode to the test station OK?

For older installations are the anodes (which pass through the tank shell) welded to the shell?

51	52	53	54	55
yes / no	yes / no	yes / no	yes / no	yes / no
n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a

Comments: _____

VIII. Comments

(reference tank and item number from above; if appropriate.)

ANNEX 10

NEW YORK SPILL PREVENTION REPORT (6NYCRR 598.1(k))

TABLE

	Pursuant to <u>598.1</u>	<u>Section</u>
General Information		
Current Registration Application and Certificate	(k)(2)i	Annex 10, Attachment 1
Management Approval and Certification	(k)(2)ii	Annex 8, Section 8.2.3
Name & Signature of qualified person who prepared the Report (NYS Professional Engineer or Qualified Person)	(k)(2)iv	Annex 10, Attachment 2
Facility Map		
Locations and identification of tanks, transfer stations & piping	(k)(2)iii	Annex 1
Summary of Releases During Past Five Years	(k)(2)v	Annex 4, Section 4.2
Identification and Assessment of Causes of Releases	(k)(2)vi	Annex 7, Section 7.1
Compliance Status	(k)(2)vii	Annex 10, Attachment 3
Inspections	(K)(2)viii	Inspection Program described in Annex 7, Section 7.5.4, 7.7.1, 7.7.2, 7.7.3
General		
Daily		Start of Shift Checklist and SPCC Checklist located at the end of Annex 7
Monthly		Monthly inspections are performed, although not required under this section
Annual		<p>(1) Annual inspections of cathodic protection systems are performed and maintained in a separate report. Reports are maintained on site</p> <p>(2) Tanks, secondary containment systems, and equipment are inspected daily – See Forms in Annex 7</p>
Five-Year		Five-Year inspection records maintained on site
Financial Responsibility (If applicable)	(k)(2)ix	N/A – will be provided to NYSDEC upon request

Spill Response Plan	(k)(2)x	Core Plan, Annexes 1, 2, 3, 4, 5, 7, 8 & 9
Discussion and Assessment of Equivalent Equipment, Method, or Practice (If applicable)	(k)(3)	N/A
Site Assessment and Findings (If applicable)	(k)(4)	N/A
Spill Reporting Form		Core Plan, Section 1.1.3
Written Procedures for the Prevention of Mixing of Incompatible Substances (If applicable)	598.4(b)(7)	N/A – Storage/handling of petroleum products and fuel additives does not present a compatibility concern under this section (all materials are compatible)

ANNEX 7..... PREVENTION

7.1..... HAZARD EVALUATION

7.1.1..... Potential for Contamination

The potential for contamination offsite is considered very slight. Each aboveground tank is contained in a concrete dike structure with concrete floors. The greatest potential for contamination is at the Dock facility where transfers occur over water.

7.1.2..... Tank Farm

Table 7-1 lists all tanks present at the Brooklyn Terminal including the substance stored. The prefix "A" indicates an aboveground tank and the prefix "B" indicates a below ground tank. The table indicates the tank type, the year originally installed; maximum volume in gallons, the possible types of failure, the prediction of flow rate and the direction of flow for all tanks. Surface impoundments are not used for product storage at this Facility. The words "tank" and "container" can be used interchangeably in the document.

7.1.3..... Estimates of Quantity of Oils Potentially Discharged

The estimates of the quantity of oils potentially discharged are shown in Table 7-1.

The Facility is a bulk storage terminal handling several types of petroleum products. The Facility receives petroleum from Buckeye Pipeline, truck, or incidental barge. The Facility stores it and transfers it to customers through the truck loading rack.

The potential for release of gasoline during a pipeline or barge receipt is dependent upon the rate at which material is pumped from the pipeline or vessel. The Facility receives products from either the pipeline or from a vessel at a maximum delivery rate of 5,400 barrels per hour.

7.1.4..... Possible Spill Pathways

The Facility is located in Brooklyn, New York on the shore of Newtown Creek. Any release from the piping at the Dock has the potential to directly impact Newtown Creek.

Site overflow drainage would most likely gently flow northeast on the Facility's property. Drainage from the employee parking lot and the wash-bay drain in the garage is to the City Sanitary and Sewer System.

**TABLE 7-1 DESCRIPTION OF ABOVEGROUND AND
BELOW GROUND STORAGE TANK STORAGE**

Tank or Source ID	Substance Stored	Tank Type or Surface Area	Year Installed	Type of Failure	Maximum Volume (gallons)	Containment Capacity (gallons)
A41	Ethanol	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	188,184 ¹
A42	Ethanol	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	
A43	Gasoline	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	187,782 ²
A44	Gasoline	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	
A45	Ethanol	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	240,859 ³
A46	Ethanol	Int. Floating Roof	1945	Overflow, rupture, leak	90,700	
A47	Gasoline	Int. Floating Roof	1960	Overflow, rupture, leak	442,062	519,886 ⁴
A48	Gasoline	Int. Floating Roof	1960	Overflow, rupture, leak	445,126	490,187 ⁴
A49	Gasoline	Int. Floating Roof	1969	Overflow, rupture, leak	484,042	992,332 ⁴
A50	Gasoline	Int. Floating Roof	1969	Overflow, rupture, leak	483,790	
A51	OOS	Horizontal	1987	Overflow, rupture, leak	5,000	15, 625 ⁵
A54	Puradd Gas Additive	Cone Roof	1993	Overflow, rupture, leak	5,000	

Note: Based on Tank inspections both internal and external, and prevention measures in place, the potential for a discharge is remote.

* A = aboveground tank B = belowground tank

** Prediction of rate of flow- pinpoint leak to catastrophic collapse
Direction of Flow - Northeast

Note¹: These tanks are within the same containment.

Note²: These tanks are within the same containment.

Note³: These tanks are within the same containment.

Note⁴: These tanks are contained within their own containment area.

Note⁵: These tanks are contained within their own containment area.

**TABLE 7-1 DESCRIPTION OF ABOVEGROUND AND
BELOW GROUND STORAGE TANK STORAGE (Cont'd)**

Tank or Source ID*	Substance Stored	Tank Type or Surface Area	Year Installed	Type of Failure	Maximum Volume (gallons)	Containment Capacity (gallons)
A53	Slop Tank	Horizontal	1993	Overflow, rupture, leak	6,000	598,000 ⁴
A55	OOS	Horizontal	1999	Overflow, rupture, leak	10,000	12,000 ⁶
A7	OOS	Horizontal	1945	Overflow, rupture, leak	9,600	228,000 ³
A8	OOS	Horizontal	1945	Overflow, rupture, leak	9,600	228,000 ³
A9	Ultrazol Gas Additive	Horizontal	1945	Overflow, rupture, leak	9,600	228,000 ³
A10	Nemo	Horizontal	1945	Overflow, rupture, leak	9,600	228,000 ³
OTHER POTENTIAL SPILL SOURCES						
A Recovery Well Tank	Petroleum Contact Water	Horizontal	1999	Overflow, rupture, leak	275	560
Rack Separators	Petroleum Contact Water	Horizontal	1940s	Overflow, rupture, leak	6,000	N/A
B Final Separator	Petroleum Contact Water	Horizontal	1940s	Overflow, rupture, leak	25,000	N/A
B 52	Rack Water Containment	Horizontal with cement vault	1989	Overflow, rupture, leak	4,000	6,800

Note: Based on Tank inspections both internal and external, and prevention measures in place, the potential for a discharge is remote.

* A = aboveground tank B = belowground tank

** Prediction of rate of flow- pinpoint leak to catastrophic collapse
Direction of Flow - Northeast

Note¹: These tanks are within the same containment.

Note²: These tanks are within the same containment.

Note³: These tanks are within the same containment.

Note⁴: These tanks are contained within their own containment area.

Note⁵: These tanks are contained within their own containment area.

Note⁶: This tank is contained within a vault.

**TABLE 7-1 DESCRIPTION OF ABOVEGROUND AND
BELOW GROUND STORAGE TANK STORAGE (Cont'd)**

OTHER POTENTIAL SPILL SOURCES						
Tank or Source ID*	Substance Stored	Tank Type or Surface Area	Year Installed	Type of Failure	Maximum Volume (gallons)	Containment Capacity (gallons)
Loading Rack(s)/ Transfer Area(s)	Petroleum Products	N/A	Various	Valve Failure; Leak	N/A	Catch Basins
Pipeline/ Pumps	Petroleum Products	N/A	Various	Receiving	N/A	Tank/Catch Basins
Vapor Recovery Unit	Condensate/ Glycol	N/A	Unknown	Maintenance	110	110
Garage/ Used Oil	Used Oil	Horizontal	1988	Overflow, rupture, leak	280	400
Water Collection	Petroleum Contact Water 7@700 gal. tanks	Horizontal	Various	Overflow, rupture, leak	4,900	> 700 gal. (inside dike walls)
Prover	Gasoline/ Distillates	Steel	Unknown	Overflow, rupture, leak	1,000	> 1,000 (use under truck rack)
DRUMS						
Lessee Storage Areas	Various Petroleum Products	Drums, Pails, Cases	----	Overflow, rupture, leak	50,000	Inside Building
Drum Storage Area	Glycol/Red Dye	Drums 4@ 55 gals.	----	Overflow, rupture, leak	220	6,800
Satellite Accumulation Area	Petroleum Debris	Drums 1@ 55 gals.	----	Overflow, rupture, leak	55	755 gal (inside truck rack)
Garage/ Grease	Grease Oil	Drums 6@ 55	----	Overflow, rupture, leak	330	> 55 gal (inside warehouse)

* A = aboveground tank B = belowground tank
 ** Prediction of rate of flow- pinpoint leak to catastrophic collapse
 Direction of Flow - Northeast

Note¹: These tanks are within the same containment.

Note²: These tanks are within the same containment.

Note³: These tanks are within the same containment.

Note⁴: These tanks are contained within their own containment area.

Note⁵: These tanks are contained within their own containment area.

Note⁶: This tank is contained within a vault.

7.1.5..... Diked Areas

All aboveground storage tanks at the Brooklyn Terminal are completely surrounded by containment dikes. Spills from the storage tanks or related product and pipeline will be contained within the diked areas and pumped out over the dike walls in accordance with NYFD requirements. Air pumps equipped with hard pipe suction are used to transfer accumulated precipitation to the oil/water separator system prior to discharge through Outfall 001.

The Facility's truck loading rack, truck pump-off area, and additive unloading is equipped with curbs, roof and strip drains designed to hold the contents of the largest single compartment on a tank truck. The spill containment system drains to a 4,000-gallon underground tank. The tank is emptied as needed and the material is transported off site for disposal. The additive unloading and truck pump-off areas are located adjacent to the truck loading rack.

Discharges from paved yard area catch basins, tank truck parking area, warehouse loading platform, garage drains (excluding wash bay), and pump out from the VRU goes to the final separator prior to discharge through Outfall 001.

The final separator is equipped with a mechanical shut-off valve that prevents flow through until the oil is pumped out of the separator. Treated water from the separator is discharged under the Facility's SPDES permit.

Drawings of the spill control drainage plan for the Facility are shown in the Core Plan, Figure 1.4 and in Annex 1. These drawings indicate the general arrangement of the fixed facilities that will prevent the release of oil and petroleum to the environment.

7.1.6..... Undiked Areas

The major portion of the tank farm piping is run in the tank farm containment area or in the protected truck loading rack area. The remaining piping is run aboveground and over the protected truck loading rack area and asphalt yard area. All other drainage of the paved area flows toward catch basin drains located throughout the Facility that ultimately drains to the final separator and processed prior to discharge.

7.1.7..... Schematic Drawing of Facility

A schematic drawing of the Brooklyn Terminal with all tanks labeled is provided in the Core Plan, Figure 1.2, and in Annex 1, Figure 1.2.

7.1.8Procedures for Routine Handling of Products

The Brooklyn Terminal has a number of established procedures in use for truck loading and transfer operations. The Facility receives products from either pipeline or barge at an average delivery rate of 5,400 barrels per hour for gasoline.

7.1.8.1Loading (Receiving) Procedures

To provide a dependable safeguard against tank overfilling, each of the storage tanks receiving product is equipped with a two-stage high-level alarm system. In an overfill situation, both a visual and audible alarm is set off, followed by a third high-high alarm which will automatically close the valve on the receiving line to effectively shut off the transfer of product into the tank and prevent an overfill. The primary alarm is set at 90% fill capacity and with a visual white light, secondary alarm at 95% fill capacity with an amber light and shut down audible alarm, and the tertiary alarm is at 98% fill capacity with a red light and shut down alarm. The Buckeye Pipeline is equipped with an automatic shut down system if a high-high (secondary or tertiary) alarm is received, while the dock operation has manual shut down devices during product receipts.

The Facility has secondary containment around each storage tank that is described in Annex 7.2. This dike has sufficient capacity to contain any expected overflow or tank rupture.

No person is allowed to handle the receipt of products unless he or she has been thoroughly trained and has demonstrated the ability to perform these procedures. Additional details on employee training are contained in Annex 5 of this Plan.

a. Preparation of Tanks Prior to Pipeline or Vessel Receipt

Prior to the receipt of product, the tank(s) are manually gauged and a product storage tank temperature taken. The exact time the gauge was taken, depth of water, (if any), the product depth, and temperature are entered in the Facility gauge worksheet. The person taking this gauge will initial the gauge worksheet. The gauger will calculate the headroom in the storage tank(s) scheduled for receipt to ensure the tank(s) will hold the amount of the receipt.

The designated responsible person for the Facility will arrange to open the manifold receiving valves and the tank receiving valves. Receipt valves and high level alarms are tested.

Other procedures for receipt by pipeline or vessel are specified in the Operations Manual.

b. Procedures During Receipt of Product

The following descriptions are general in nature and for informational purposes only. The Facility's operating procedures and instructions govern the receipt of product. These procedures are maintained in the Terminal Office.

Qualified personnel will be on duty during receipt of product. These personnel receive periodic refresher instructions on the correct procedures to use during product transfer. The person in charge of receipt of the product follows local Facility procedures for receipt of product.

After product has started to flow, the qualified person walks the pipeline to the receiving tank checking for leaks. At the tank, the automatic gauge is checked to assure product is flowing into the proper tank.

During the tank receipt, the person in charge will calculate a rough gauge (final height) for the receiving tank. Thereafter, the person in charge of the receipt will check the tank gauge (product level) at least once an hour.

If the tank is to be filled to near capacity, it will be gauged more often when the tank is nearly full. The qualified person will remain on watch on the platform of the tank (or other suitable observation location) during the last half hour of pumping. After each hourly gauge, the receiving lines will be walked to check for leaks.

If more than one tank is on a delivery line, the tank not receiving product will be gauged prior to start of delivery and at the first hourly gauge to make sure there is no leak in its valve or confusion in quantities received that could possibly cause an overfill of the tank.

c. After pumping procedures

After completion of the receipt, external valves on the delivery line will be closed. The tank will be manually gauged and measured for water and the temperature of the produce will be accurately measured at the midpoint of the product. This information will be recorded in the gauge worksheet along with the time receipt was completed. The qualified person will initial the entries in the gauge worksheet for identification.

d. Communications During Receipt

- (1) When product is received by marine transport - On barge receipts, visual and oral communication is maintained between the vessel's hose watch and the Facility's hose watch. Product to be received, pumping rate and batch size are reviewed prior to start-up. Adequate sets of portable, intrinsically safe transceiver radios are available and used, which enables direct communication between pumping station or vessel, hose watch and tank watch.

7.1.8.1 Loading (Receiving) Procedures (Cont'd)

d. Communications During Receipt (Cont'd)

- (2) When product is received by pipeline, the person responsible for the receipt maintains the frequent communication with the pipeline company. Meanwhile, another person is constantly gauging the tanks while communicating via intrinsically safe radios with personnel in the office. Any changes (such as type of product, quantity, amount of room in the tank, the need for pipeline wash, and other appropriate information) are exchanged between the pipeline and the Facility.

7.1.8.2.... Tank Truck Procedures

a. Receipt of Product by Tank Truck

Receipt of product by tank truck is scheduled by Facility personnel. The procedures covering the receipt of product by tank truck are specified in the *Terminal Operations Manual*. Those procedures and Facility operating procedures and instructions control the receipt of product. The following description is for the purposes of information only. The procedures and instructions are maintained in the Terminal Office.

Preparation includes assignment of qualified personnel to receive the product. The truck unloading area is maintained free of obstacles. Should any accidental discharge occur, the area is graded to discharge into strip drains that go to a primary separator and then to the final separator prior to discharge.

- ◆ A fire extinguisher is maintained at the pump-off spot.
- ◆ Only qualified employees are permitted to pump-off transport trucks. These individuals are trained in the prescribed loading / unloading procedure for tank trucks according to instructions in the training manual.
- ◆ The transport truck is attended at all times during the unloading process to provide instant shut down in case of an emergency.
- ◆ All pump-off lines are capped, all valves kept closed, and the tank valve locked except when in use.
- ◆ No mobile storage tanks are at the Facility.

7.1.8.3.... Tank Truck Loading Procedures Using the Loading Rack

a. Transfer of Product Into Tank Trucks

The Facility uses an automated system for the transfer of product into tank trucks. The system is designed to prevent spills and overfills. As an additional precaution against spills, the drivers are permitted to use the truck rack control system and have received instruction from Motiva on the correct procedures to use in accessing the system, safety precautions, and spill reporting.

7.1.8.3.... Tank Truck Loading Procedures Using the Loading Rack (Cont'd)

a. Transfer of Product Into Tank Trucks (Cont'd)

The general procedures for operation of the truck rack control system are found in the *TMS System User Manual* located in the Terminal Office.

Only authorized truck drivers can gain access to the loading rack by presenting an authorization card and entering a unique driver code number (PIN).

The trucks are bottom loaded at this Facility. The trucks are equipped with a loading bar or brake locks that lock the brakes and prevent the truck from starting.

The drivers are instructed to carefully inspect vehicles to make sure that bottom valves are not leaking. Trucks are occasionally spot inspected. In the event that a vehicle fails inspection the truck will be barred from the Facility until the necessary repairs have been completed.

The automatic loading equipment also verifies that the driver has connected the grounding, overfill protection equipment, and vapor connection. This ensures that the truck is properly grounded to reduce the potential for static electrical discharges and that the truck overfilling protection equipment is properly operating. While loading, drivers must hold a "dead man" button or pumps while shut down and product will not flow to the truck.

When the driver completes loading he or she proceeds to the bill of lading printing area, obtains the bill of lading, opens the automatic gate, and leaves the Facility. Once the truck is loaded, the driver has custody of the shipment and is responsible for safe delivery of the product. Despite the fact that the driver is still inside the Facility gates, the driver is responsible for the shipment, and any spills that occur at that point will be considered transportation related.

b. Specific Procedures in Use for Truck Loading

Specific procedures in use for truck loading at the Facility are described in the *Terminal Operations Manual* and in specific terminal operating procedures. These are kept in the Terminal Office files.

- The Facility has specific safety procedures that include requirements for trucks to park away from the loading rack when awaiting the opportunity to load product.
- Loading will be stopped during severe electrical storms.
- Smoking permitted in designed areas.

7.1.8.3.... Tank Truck Loading Procedures Using the Loading Rack (Cont'd)

b. Specific Procedures in Use for Truck Loading

- Under no circumstances will a truck in the process of loading be left unattended or will it be parked at the rack unattended.
- All truck lights, heaters, accessories, and non-operating electrical equipment will be turned off before entering the loading area, and will only be turned on after leaving.
- Any stalled trucks will be towed away from rack prior to repairs. Booster batteries will be connected more than 100 feet away.
- All DOT regulations will be followed.

7.1.8.4.... Facility Tank Truck Loading and Unloading Facilities

a. Description of Drainage and Barrier Systems

The Facility's truck loading rack has a drainage system that is designed to hold the contents of the largest single compartment on a tank truck. The spill containment system has a cement slab with drain inlets and strip drains connected to a 4,000-gallon underground tank. The truck pump-off and additive unloading areas are also located within the loading rack area. The additive unloading area utilizes the same containment system as the loading rack. The holding tank is emptied as needed.

The truck rack is covered by a large canopy to minimize rainwater collecting at the rack. Any liquid (water, melted snow or hydrocarbon) that falls beneath the canopy flows by gravity to a sub surface holding tank where it is manually emptied via a vacuum truck.

b. Disconnect Protection Systems

All trucks that load at the Facility have either a locking bar or other interlocking system to prevent the truck from being moved while the vapor recovery and/or loading hoses are still connected to the truck. All trucks are also equipped with over-fill protection and are grounded to ensure further safety. Truck over-fill protection is tested annually by the carrier for every truck and records are kept in the Terminal Office.

c. Examination of Bottom Drains on Vehicles

The drivers are instructed to carefully inspect vehicles to make sure that bottom valves are not leaking. In the event that a bottom valve is discovered leaking, the truck will be barred from the Facility until the necessary repairs have been completed.

7.1.8.4 Facility Tank Truck Loading and Unloading Facilities (Cont'd)

d. Overfill Protection System

The overfill protection system shall be checked for proper operation prior to loading.

7.2 SECONDARY CONTAINMENT

7.2.1 Dikes and Dike Capacity

The Facility tanks are surrounded by dikes that have a capacity in excess of the largest of the tanks plus an allowance for rainfall. The total storage capacity of the tank farm containment area is adequate to contain the largest tank (450,000 gallons) and has enough volume for a rainfall allowance.

The volumetric capacity of the containment areas has been prepared by David Martin, Motiva Enterprises, and RPMS Engineers.

7.2.2 Dike Integrity

Diked areas are sufficiently imperious to contain spilled oil. Containment walls and floors are fully intact and have no permeable voids. The tank farm containment dikes are constructed of concrete. The additive tanks are contained within concrete containments or contained within underground containment areas.

7.2.3 Curbing

The other principal area that could result in a release of petroleum is the truck loading rack. The loading rack has curbs to direct any potential spilled product to flow by gravity to a sub-surface holding tank where it is manually emptied via a vacuum truck. The loading rack containment system is substantially larger than the largest single compartment that could spill on the rack.

7.2.4 Culverts, Gutters or Other Drainage Systems

The Facility removes tank water bottoms by transferring it into water collection tanks, then the water is pumped to a holding tank and the product is returned to storage. The tank is contained within a concrete containment dike that is adequately sized to contain the entire contents of the tank plus sufficient freeboard.

Dock drainage procedures (booming equipment and drip pans) are covered in the Dock Operations Manual.

7.2.5 Retention Ponds

This Facility does not have a retention pond.

7.2.6 Sorbent Materials

All sorbents used for spill response will be supplied by contracted OSROs.

7.2.7 Positive Controls to Prevent Drainage From Diked Areas

The positive controls used to prevent drainage from diked storage areas include procedural controls and equipment to prevent the discharge of oils from all areas of this Facility.

- ◆ The preferred method of removal of accumulated stormwater is by natural evaporation provided that the accumulation does not damage the equipment / structures or inhibit operations conducted within the containment area.
- ◆ In the event that drainage of an area becomes necessary due to accumulated stormwater, the containment area air pumps equipped with hard-pipe suction and discharges are pumped to the oil/water separator outside the diked area then to the final separator prior to discharge through Outfall 001. If a visible sheen or other condition indicating the presence of oil or gasoline is present, the valves are not operated.
- ◆ In the tank farm area, all tank water withdrawal valves are closed and locked when not in use. All basin drain valves, where installed, are closed and locked when not in use. When the basin drain valves are operated, the water in the basin is inspected by an employee prior to operation of the valve.
- ◆ Accumulated water is visually inspected for oil and / or oil product contamination (sample procedures and documentation forms are provided in Annex 7) and discharged only if no contamination is observed.
- ◆ The Facility does not have an effluent treatment facility.
- ◆ In the event that drainage of contaminated liquids from a containment area is required, the use of a vacuum truck, pump, or other means will be evaluated for the removal.

7.2.8 Disapproval of Flapper-Type Drain Valves

Flapper-type drain valves are not used in this Facility.

7.2.9 Drainage from Undiked Areas

This topic is discussed in detail in Annex 7.1.6.

7.3 BULK STORAGE INSTALLATION

7.3.1 Material Compatibility Standards

The Facility's bulk oil and oil product storage tanks have been designed in accordance with industry standards. The tanks have the following design characteristics:

- ◆ Tanks are constructed of a material that is compatible with the oil and petroleum products stored and the conditions of storage.
- ◆ Tanks are operated within "Safe Fill" levels positioned below the established capacity limits of the tank.
- ◆ A conversion of tanks or construction of a new tank for Ethanol is constructed at regulatory standards. A Management of Change for the standard is completed to cover an Ethanol change.

7.3.2 Secondary Containment Sufficiency

A discussion of the secondary containment sufficiency for this Facility is presented in Annex 7.2 above.

7.3.3 Drainage Bypass Systems

The Facility does not have a bypass system for Facility drainage.

7.3.4 Underground Metallic Storage Tanks

There is one underground storage tank at this Facility. The tank is registered, within a cement vault, and provided with cathodic protection.

7.3.5 Partially Buried Metallic Storage Tanks

There are no partially buried metallic storage tanks at this Facility.

7.3.6 Integrity Testing Standards for Aboveground Storage Tanks

The tank integrity and testing standards are discussed in Section 7.10.

7.3.7 Internal Heating Coils

There are no internal heating coils in any of the Facility tanks.

7.4 DISCUSSION OF FAIL SAFE ENGINEERING AND DESIGN STANDARDS

As far as practical, the Facility has been engineered to fail-safe engineering standards. The fail-safe provisions include, but are not limited to:

- ◆ Automated truck loading rack system that allows the loading of trucks with maximum safety.

- ◆ The use of large loading rack roof to minimize the entry of rainwater into the loading rack.
- ◆ The use of audio high-level alarms on all tanks that receive product from the pipeline or vessel.
- ◆ The use of tank dikes to prevent petroleum from flowing from the Facility property.
- ◆ Tank inventory is maintained by the Alliance Distribution Measurement Policy.
- ◆ The policy manual is a separate document located at the Terminal Office.

7.4.1 High Liquid Level Alarms

Motiva Enterprises LLC petroleum storage tanks have high liquid level alarms that have audible signal to detect high levels during filling operations. Upon hearing a high-level alarm, Facility Personnel will check the tank and tank level to verify its contents and integrity. This Facility also has valves with fusible link cut-offs to stop a high-flow event. Alarms are tested on a regular basis.

Tank high-level alarms and gauging devices are tested by pulling alarms and verifying manual versus automatic gauges prior to every receipt by the Terminal Operators. Tank high-level alarms are inspected by a certified electrician annually. Tank high-level calculations are reviewed and verified annually by Terminal Management.

7.4.2 Emergency Shut-off Devices

The Buckeye Pipeline will shut down flow to the Facility immediately upon receiving a high-high (secondary or tertiary) level alarm. Upon receiving the high-high level alarm, the Buckeye Pipeline will automatically close pipeline valves to the Facility. The pipeline can shut down flow within five minutes in an emergency.

7.4.3 Direct Communications Between Facility and Pipeline

The Terminal Operator and the Buckeye Pipeline Operator communicate verbally before each receipt. For attended receipts, communication is maintained after flow has started and at the completion of each receipt.

7.4.4 Fast Response Gauging Systems

The Facility uses quick response manual gauges that enable the Terminal Operator to determine the level in each of the tanks. The tank gauges are float-style gauges.

7.4.5..... Visible Oil Leaks

Cleanup of all oil leaks starts on discovery and will be completed in a safe and expedient manner. An oil leak is considered cleaned up when there are no visible traces of oil or petroleum on the ground.

7.4.6..... Mobile or Portable Oil Storage Tanks

Mobile or portable oil storage tanks may be brought on-site during various operations. These portable tanks will be positioned or located so as to prevent spilled oil from reaching navigable waters. The largest mobile/portable container will be provided with containment plus sufficient freeboard for precipitation.

7.5..... FACILITY TRANSFER OPERATIONS

7.5.1..... Buried Piping

Below ground piping is cathodically protected and coated to reduce corrosion.

The cathodic protection system is monitored monthly and the values for impressed voltages are recorded.

The cathodic protection system is checked annually by technically competent personnel. Copies of the reports are maintained in the Terminal Office for a minimum of five (5) years.

All underground product transfer piping is tested periodically. Copies of the reports are maintained in the Terminal Office.

When a section of buried pipe is exposed, it is carefully examined for deterioration and corrective action taken as necessary.

Buried piping installed or replaced after August 16, 2002 will be provided with a protective wrapping and coating and cathodic protection.

7.5.2..... Aboveground Piping

All aboveground valves and pipelines are regularly examined during operating personnel rounds. During these examinations, operating personnel assess the general condition and necessity for corrective actions of the pipelines.

7.5.3..... Out-of-Service Piping

Out-of-service pipelines will be capped or blind flanged and marked to its origin in the event that a Facility pipeline is removed from service or is placed in standby status for an extended time. Any out-of-service piping has had the product removed and the piping has been blind flanged or capped off.

7.5.4..... Design of Piping Supports to Reduce Abrasion

All piping supports are visually inspected to ensure that any abrasion is quickly detected. The aboveground piping is supported on a transverse horizontal pipe to minimize contact and abrasion. Where appropriate, special wearing shoes are welded on to the underside of pipes to further reduce abrasion potential in areas of high pipeline movement.

7.5.5..... Inspections

The Facility conducts a number of different types of inspections. A discussion of inspections and tests is presented in Annex 7, Section 7.7. Pipeline inspections are part of the Facility's Daily Inspection. Sample Inspection Checklist(s) are included at the end of this Annex.

7.5.6..... Warning Signs for Vehicular Traffic

Warning signs for vehicular traffic are prominently placed at strategic locations throughout the Facility. These signs warn all vehicles entering the Facility about the dangers related to the aboveground piping or other oil transfer operations. The signs include instruction for use of the loading rack, spill notification directions, and entrance and exit.

7.6..... NORMAL DAILY THROUGHPUT

The normal daily throughput for the Brooklyn Terminal is 840,000 gallons. When demand and, subsequently, daily throughput increase, the potential release volumes increase. This increase typically occurs in the summer.

7.7..... DISCHARGE DETECTION BY PERSONNEL

A spill or release can be discovered by visual inspection. The initial response actions described in Core Plan, Section 1.1.7.1 will be implemented if any spills are detected.

7.7.1..... Visual Inspection

The Terminal Operator examines the tanks and the equipment in the tank farm daily to ensure that there are no visible leaks in the tanks or piping system.

All visible tanks, lines, flanges, pumps, and other equipment are examined on a routine basis for indications of leaks, drips, sweating, etc. Repair of any such item is handled on a priority basis. Inspections include gauge hatch covers, manhole covers, gaskets, and foundations.

The exposed surfaces of the tanks, pipelines, and all equipment are inspected visually for the presence of discoloration or blistering that could indicate that the exterior paint is failing, or that the tank is leaking at a seam or through a pinhole. When any discoloration or blistering is observed, the tank or pipeline is repaired or replaced.

Other records of visual inspections that are made on a periodic basis, such as the internal floating roof seals, are kept in the Terminal Office on a dedicated form.

Motiva Enterprises LLC employs contractors to perform maintenance at the Facility. The maintenance is performed as required.

7.7.2..... Facility Self Inspection

The following is a partial list of the inspections that are made periodically at the Facility. Complete files on the results of these inspections are maintained by the Facility and are retained for a period of five (5) years. **The following list is for example only and addresses only those items that are important to the operation and spill control issues at the Facility.**

TYPICAL FACILITY INSPECTIONS

Item	Description of Inspection or Test-Repair if defective
LOADING RACK	
Fire Extinguishers at all locations in the Facility	Check for full charge / recharge where needed
All loading arms on the loading rack	Visually Check for leaks, counter balance operations, dry brake coupler seal, jaws, swing stops, adjust where required.
Truck Flush Equipment	Visually Check joints, swivels, couplers, and movement freedom
All Flow Control Valves and Meters	Inspect micro-switch screws and O-rings for leaks
All Turbine Flow Meters	Inspect and Check
All Temperature Probes	Re-calibrate
All Pressure Gauges	Inspect for operation / leaks
All Strainers	Inspect
Grounding Devices at lanes on loading rack	Inspect and Check
Overfill Device	Check Operation and status lights. Check to ensure bypass switch is locked in on position.
Vapor Flow Sensors	Physical check of successful operation during loading.
Rack Junction Boxes, Electrical	Check
Intercom	Check
Seals and gaskets	Visually inspect all piping, valves, fitting and component connections, seals, gaskets and valve packing for leakage or looseness
Meter Presets	Check function, ensure seals in place
TRUCK UNLOADING SYSTEM	
Pump motor	Check for leaks
Air Eliminator	Check for leaks
Temperature Probe	Re-calibrate, Check for leaks
Water Draw Off Valves	Check for leaks, valves closed, splash blocks in-place
Pressure Gauges	Check for operation, leaks
Pump off hoses	Check for leaks
STORAGE TANK FACILITIES	
Tanks	Inspect roof devices, openings, for security and labeled. Observe domes and roofs for damage.
Water Draw Off Valves	Ensure valves closed and locked, check for leaks
Tank Level Gauges	Check for free movement, level transmitters
Tank Thermometers	Check for calibration
Tank Hi-Level Alarm	Manually Check audible alarm activation
Tank Level Transmitter	Compare readings and re-calibrate
Tank Motor Operated Valves	Completely check operation
Tank Hand Operated Valves	Check for leaks, operation
Tank Safety Control Valve	Check Operation
Product Pump Motor	Inspect for leaks, check operation
Tank Relief Valves	Check operation
Pressure Gauges	Check
Seals / Gaskets / Vitualic Couplings	Check for leaks
Tank Wall & Drains	Visual Inspection
Oil-Water Separator	Visual Inspection
Manifold Area	Thorough check of all valves, visual inspection, lubricate as required
Pipeline Signal Control Panel	Check for correct operation & pipeline signals

TYPICAL FACILITY INSPECTIONS (Cont'd)

Item	Description of Inspection or Test-Repair if defective
SECURITY SYSTEMS	
Perimeter Fence	Visual Inspection
Perimeter Gates	Check for locks and chains
Signs and Signboards	Check to ensure that warning signs, notices, instructions, and "Stop Here" lines are not obstructed and that they are secure and legible
Facility Area Lighting	Visually check lighting and ensure that lights are operating and are aimed for maximum illumination

The Facility maintains the records described below:

1. Records of Pressure Tests on Piping
2. Records of Meter Calibrations
3. Records of Repairs made to Facility
4. Environmental Records, including
 - a. Inspections of all water outfalls and water analyses
 - b. Environmental records of any and all groundwater testing
 - c. Personnel Training Records
 - d. Waste disposal manifests
 - e. Tank Cleaning and inspection records
 - f. Other records required by permits
5. Product reconciliation and tank testing records
6. Reports on cathodic protection testing and inspections
7. Records of key and lock assignments
8. Records of safety meetings

7.7.3..... Other Procedures

7.7.3.1.... Pressure Testing of All Pipelines

Motiva Enterprises LLC periodically tests all pipelines in the Facility. The work is performed by an outside contractor and reports of each pressure test are kept in the Terminal Office files for a minimum of five (5) years.

7.7.3.2.... Tank Testing

The Facility conducts periodic tank testing to ensure tank integrity. The tests are indirect, but are indications of the tank soundness.

7.7.3.3 Cathodic Protection Testing

All steel tanks and lines are protected by an impressed current cathodic protection system. In order to protect the tanks and the pipelines, the system is inspected annually by technically qualified personnel.

7.7.3.4 Soundness Testing and Inspection

- ◆ The containers are visually inspected by operating personnel for signs of deterioration, leaks, or the accumulation of liquids inside the containment areas.
- ◆ Each storage container is inspected according to Company policy, as required by age, condition, and service. The monthly tank inspection records are maintained in a separate file at the Facility.
- ◆ Motiva Supporting Documentation – Refer to Tank and Pressure Vessel Inspection and Maintenance Manual for details.
- ◆ Based on these conditions, the aboveground storage containers are professionally inspected and non-destructive thickness testing is performed.
- ◆ All aboveground storage tanks are included in the scope of this inspection and maintenance document. This includes small tanks, additive tanks, water tanks, horizontal tanks, UL-142 tanks, API 650 tanks, vapor tanks, pressure vessel, etc.
- ◆ Inspection/testing records are retained in a separate file at the Facility for a minimum period of five (5) years or longer based on industry standard of Corporate policy. (Industry standard is to retain records for the life of the tank).
- ◆ If a field-constructed aboveground container undergoes a repair, alteration, reconstruction, or change in service that might affect the risk of a discharge or failure due to brittle fracture, the container will be evaluated.
- ◆ Drums or totes brought on-site are built or tested to the standard(s) or in-process inspection and testing procedures established by the drum manufacturer or the drum recycler, as applicable.
- ◆ While on-site, the drums or totes will be visually examined at least monthly.

7.7.3.5 Product Justification Record

Several types of records are kept in the Facility. These records are examined on a daily basis.

A daily record is kept of the amount of product in storage in the tanks, products shipped through the truck loading rack, and products received from pipelines and vessels.

A bulk stock loss record is maintained at the Facility and balanced monthly. The bulk stock loss record is used to compare the actual variations, both gross and net, of product to the amount that is reasonably anticipated. Any variances in the records are immediately investigated.

7.7.3.6 Locks and Seal Assignments

The Facility maintains a log of current key assignments, locks, and security seals.

7.7.3.7 Written Procedures for Inspection

Written procedures have been developed for this Facility and a record of the inspections, signed by the appropriate inspector, is kept in the Terminal Office files. Sample forms are also located at the end of Annex 7.

7.7.3.8 Record Retention Policy

Records of inspections must include each container, secondary containment, and item of response equipment at the Facility. The records of inspections must be cross-reference to retention location.

Inspection of response equipment is a requirement under 40 CFR 112.7(e). Facility self-inspection requires two-steps; (1) a checklist of things to inspect; and (2) a method of recording the actual inspection and its findings. Facility Response Plan records must be kept for five (5) years. The SPCC records are retained for three (3) years. Industry standards are that tank inspection records be retained for the life of the tank. Records are maintained in the Terminal Office.

7.8 APPLICABLE MORE STRINGENT STATE DISCHARGE PREVENTION RULES AND REGULATIONS

- ◆ 6 New York Code of Rules and Regulations, §610-614.

PIPELINE CHECKLIST						
LTA:		V:		PRODUCT: Regular Unleaded Gasoline		
Receipt Assigned to:		Tender No:		Diesel Super Unleaded Gasoline		
Name:				Avjet Premium Unleaded Gasoline		
Relief:				Quantity:	Barrels	Gallons
Assistant:				Height:	Split Tanks	
1. Checked High Level Alarms Yes No				3. Cut Off Loading Rack Meters		
2. Notify Pipeline Company				4. Gauged Tanks		
TANK NUMBER	TEMPERATURE (DEGREES F)	PRODUCT HEIGHT (INCHES)	WATER (INCHES)	TANK TO BE FILLED		CHECK HEADER VALVE
				Yes•	No	
				Yes•	No	
				Yes•	No	
**Any exception, notify Supervisor (notes)						
5. Contact Pipeline Delivery Station				Telephone Number:		
6. Check Batch Delivery Detail with Operator						
7. Check All Tank Valves on Same Header						
8. Compute Approximate Gauge for After Receipt _____ Ft.						
9. Receipt Started						
Check Header line-up / leaks				Auto Gauge Operator? Yes No		
Take Line Sample: _____ (time)				All Tanks Same Header? Yes No		
Walk Line – Check Auto Gauge				Run Sample and Log _____ (time)		
10. Read and Record Hourly Gauge, Walk Lines, Check Header.				Gravity and Flashpoint _____ (reading)		
11. At First Hourly Gauge, check all gauges on all tanks connected to the same header.						
12. If tank is to be filled, ask for assistance last 30 minutes of pumping.						
13. If tank is to be filled, maintain steady watch last half hour prior to filling.						
14. After Receipt is Completed:						
Checked and Cleared Pipeline _____ (time)				Closed Tank Valves(s)		
Closed Header Valve				Read and Logged Auto Gauges & Time		
15. Made Final Gauge - Cut Rack Motors						
TANK NUMBER	TEMPERATURE (DEGREES F)	PRODUCT HEIGHT (INCHES)	WATER (INCHES)	SAMPLE		FINAL SAMPLE TESTED
						Yes•
						No
						Yes•
						No
						Yes•
						No
16. Log All Data in Gauge Book				Sign with Date and Time		
17. Receipt Responsibility Reassigned:						
Name:				Date:	Time:	
Name:				Date:	Time:	
Receipt Completed By:				Date:	Time:	

Sample Only

DAILY CHECKLIST

MOTIVA ENTERPRISES LLC
FACILITY REGISTRATION NUMBER 2-1940
25 PAIDGE AVE, BROOKLYN, NY 11222

DATE / / SHIFT PERFORMED BY:

YARD	TIME	STATUS
CHECK SEPERATOR FOR OIL ACCUMULATION / CREEK FOR SHEEN		
CHECK YARD FOR UNSAFE CONDITIONS		
CHECK PERIMETER FENCING AND LIGHTING		
MTY GARBAGE PAILS		
CHECK FOG ROOM / FOAM ROOM HEATERS AND PIPING		
DRAIN AIR COMPRESSOR YES / NO		
COMMENTS		

DOCK / TANK FARM 41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-9-10	TIME	STATUS
CHECK ALL VALVES, PUMPS, MOTORS, FOR UNSAFE CONDITIONS / LEAKS		
GAUGE TANKS, CHECK TANKS, PIPING, COUPLINGS, FLANGES FOR LEAKS		
CHECK STAIRWAYS / CROSSEOVERS FOR UNSAFE CONDITIONS		
RECEIVING BARGE OR PIPELINE		
CHECK DOCK LINES FOR PRODUCT SEEPAGE, WASTE, SEWAGE		
CHECK DOCK SYSTEM FOR DISCHARGE AT CREEK		
CHECK CONTAINMENT FOR SIGNS OF DEBRIS, EROSION, CRACKS, DISCOLORATION, SIGNS OF SPILLED OR LEAKING PRODUCT		
COMMENTS		

VAPOR RECOVERY	TIME	STATUS
DRAIN VAPOR LINE EACH SHIFT		
USE CHECKLIST ONCE PER WEEK		
CHECK FOR LEAKS, PRESSURES, UNSAFE CONDITIONS		
COMMENTS		

RACKS	TIME	STATUS
CLOSEOUT		
CHECK ADDITIVE		
CHECK FOR UNSAFE CONDITIONS, LEAKS		
GROUND CABLES / AIR HOSE OK / NG SCULLY SYSTEM OK / NG		
LOADING ARMS / COUPLER CONDITION OK / NG		
COMMENTS		

NOTIFY SUPERVISOR OF ANY POOR CONDITIONS IMMEDIATELY

PLEASE INSERT G = GOOD P = POOR IN STATUS

DATE _____

[illegible]

ZONE #3 TANKS 45-46 REAR OF TANKS 40-50

ZONE #4 FRONT OF TANKS 48-50 ZONE #5 OLD UNDERGROUND TANK FARM

MUST INSPECT ZONE BEFORE PUMPING. IF A SHEEN IS PRESENT DO NOT PUMP THAT ZONE.

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	41/42	Comments
Dike volume in gallons (from Walter Gorman Calculations)	188,183.93	
Overflow fill volume of largest tank:	88,978.00	Tank 42
Gallons per foot of smaller tank:	3,360.00	Tank 41
Avg. dike wall height:	6,912	
Displacement of other tank:	23,224.32	=gallons per foot of smaller tank X avg. dike wall height
Misc displacement (pipes, pumps, etc)	3,763.68	Assume 2%
Containment Percentage:	162%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	43/44	Comments
Dike volume in gallons (from Walter Gorman Calculations)	187,781.5765	
Overflow fill volume of largest tank:	88,912.00	Tank 44
Gallons per foot of smaller tank:	3,360.00	Tank 43
Avg. dike wall height:	6.870	
Displacement of other tank:	23,083.20	=gallons per foot of smaller tank X avg. dike wall height
Misc displacement (pipes, pumps, etc)	3,755.63	Assume 2%
Containment Percentage:	162%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	45/46/7/8/9/10	Comments
Avg. Dike Height:	6.95	
Dike Length:	109.00	
Dike width:	42.00	
Dike Area:	31817.10	
Basin 1 Area	141.67	
Basin 2 Area	125.00	
Basin 3 Area	116.67	
Total Area:	32200.43	
Dike volume in gallons :	240,859.2413	
Overflow fill volume of largest tank:	96,061.00	Tank 45
Gallons per foot of Tank 46	3,360.00	Tank 46
Gallons per foot of Tank 9	647.69	
Gallons per foot of Tank 10	647.69	
Avg. dike wall height:	6.950	
Displacement of Tank 46	23,352.00	=gallons per foot of smaller tank X avg. dike wall height
Displacement of Tanks 9/10	2,450.43	Active floor of tanks are 50" above dike floor. Area below floor is open for product to enter. Tanks 7 @ 8 are out-of- service and open and will allow product to enter.
Misc displacement (pipes, pumps, etc)	4,817.18	
Assume 2%		
Containment Percentage:	190%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	47	Comments
Dike volume in gallons (from Walter Gorman Calculations)	519,885.8233	
Overflow fill volume of largest tank:	442,064.00	Tank 47
Gallons per foot of smaller tank:		N/A
Avg. dike wall height:	9.260	
Displacement of other tank:	-	=gallons per foot of smaller tank X avg. dike wall height
Misc displacement (pipes, pumps, etc)	10,397.72	Assume 2%
Containment Percentage:	115%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	48	Comments
Dike volume in gallons (from Walter Gorman Calculations)	490,186.6977	
Overflow fill volume of largest tank:	445,126.00	Tank 48
Gallons per foot of smaller tank:	-	N/A
Avg. dike wall height:	6.912	
Displacement of other tank:	-	=gallons per foot of smaller tank X avg. dike wall height
Misc displacement (pipes, pumps, etc)		Assume None
Containment Percentage:	110%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	49/50	Comments
Tank 49 Dike volume in gallons (from Walter Gorman Calculations)	497,662.4868	
Tank 50 Dike volume in gallons (from Walter Gorman Calculations)	494,669.5702	
Tank 49 & 50 combined dike volume (connected by overflow)	992,332.0570	
Overflow fill volume of largest tank:	484,039.00	Tank 42
Gallons per foot of smaller tank:	12,978.00	Tank 41
Avg. dike wall height:	8.080	
Displacement of other tank:	104,862.24	=gallons per foot of smaller tank X avg. dike wall height
Displacement of Tank 53 (horiz. Waste) in gallons:	6,000.00	Max capacity
Misc displacement (pipes, pumps, etc)	9,893.39	Assume 2%
Containment Percentage:	164%	'OK'

MOTIVA BROOKLYN TERMINAL REVISED DIKE VOLUME CALCULATIONS		
By:	David O. Martin, Project Coordinator	
Tank No (s):	51/54	Comments
Dike volume in gallons (from Walter Gorman Calculations)	15,625.22	
Overflow fill volume of largest tank:	6,000.00	Tank 51
Gallons per foot of smaller tank:		N/a
Avg. dike wall height:	5.400	
Displacement of other tank:	6,000.00	=Max cap. In gallons
Misc displacement (pipes, pumps, etc)	312.50	Assume 2%
Containment Percentage:	127%	'OK'

CONTAINMENT VOLUME CALCULATIONS

MOTIVA ENTERPRISES LLC

BROOKLYN TERMINAL
BROOKLYN, NEW YORK

TRUCK LOADING RACK AND ADDITIVE TANKS 51 & 54 CONTAINMENT AREAS

CONTAINMENT VOLUME CALCULATIONS

PREPARED BY:

RPMS

CONSULTING ENGINEERS

1 ROSSMOOR DRIVE
MONROE TWP., NEW JERSEY 08831

RPMS PROJECT NO. 4844

AUGUST 2010

ADDITIVE TANKS CONTAINMENT

TANK 54 - 3,000 Gal. Vertical Tank

Dimensions: $D_{54} := 8.00$ ft $H := 13.33$ ft

Tank Volume: $V_{54} := 3000$ Gal.

TANK 51 - 5,000 Gal. Horizontal Tank

Dimensions: $D_{51} := 8.00$ ft $L := 14.50$ ft

Tank Volume: $V_{51} := 5000$ Gal.

Check Dike Containment For 110% of the Largest Tank Capacity

Containment Dike Dimensions

Dimensions: $B_c := 12.00$ ft

$L_c := 32.67$ ft

$H_c := 5.33$ ft

Containment Capacity

Gross Area: $A_g := B_c \cdot L_c$

$A_g = 392.04$ ft²

Area Displaced by Tank 54: $A_{54} := \frac{\pi \cdot D_{54}^2}{4}$ $A_{54} = 6.28$ ft²

Net Area: $A_{net} := A_g - A_{54}$ $A_{net} = 385.76$ ft²

Total Dike Containment: $V_C := A_{net} \cdot H_C \cdot 7.48$

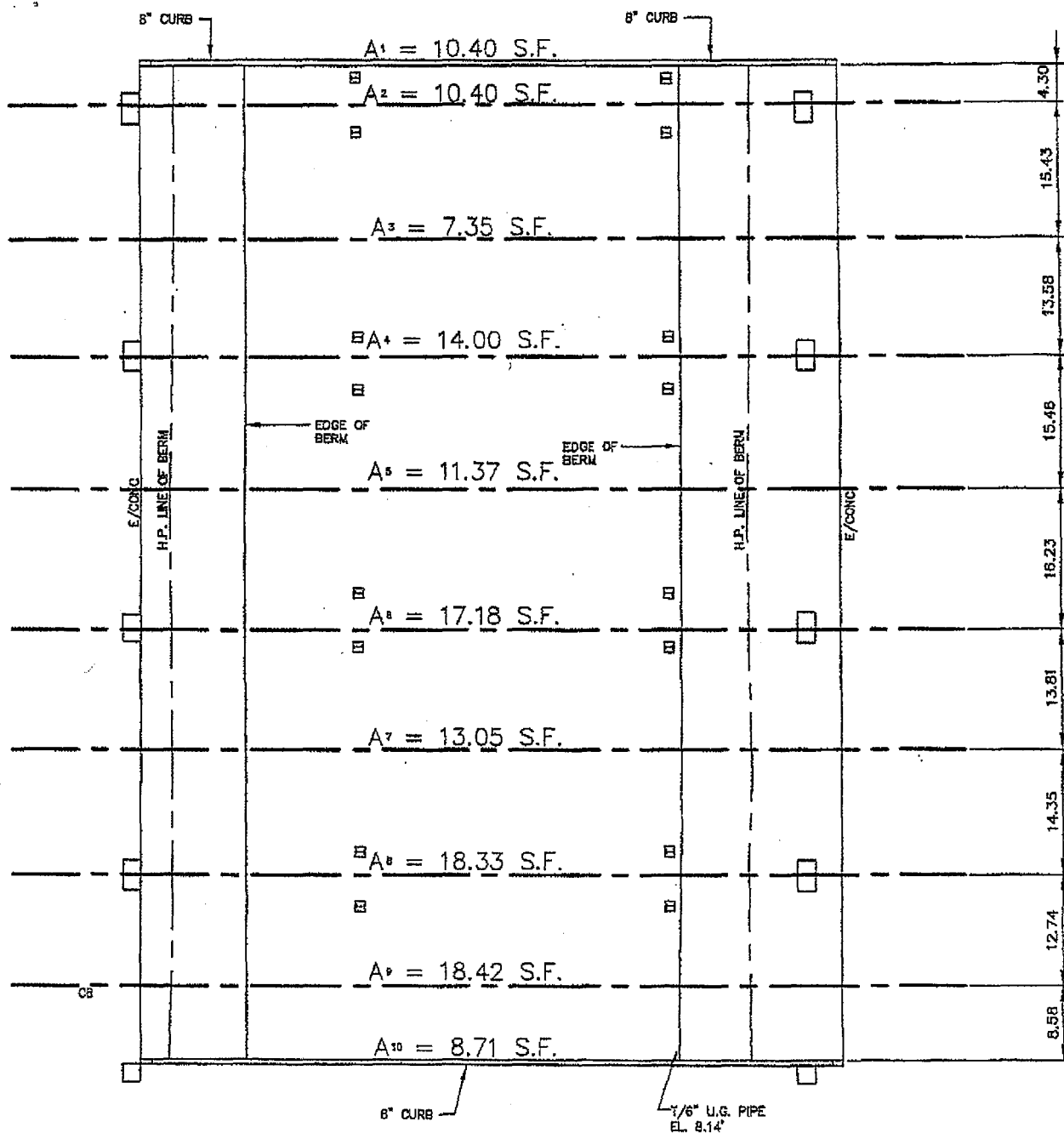
$V_C = 15379.51$ Gal.

Containment Volume Required

$V_R := 1.10 \cdot V_{51}$ $V_R = 5500.00$ Gal.

$V_C \gg V_R \Rightarrow$ OK

Containment capacity exceeds by far the required capacity



TRUCK LOADING RACK

A = DENOTES AREA ACROSS PLANE WITH
RESPECT TO CONTROL ELEVATION 10.00'

TOTAL CONTAINMENT VOLUME = 1,539 S.F. = 11,510 GAL.

Motiva Enterprises LLC
Brooklyn Terminal
Truck Rack Containment Calculation
RPMS Project No. 4844

7/21/2010

Plane	Area (ft ²)	Dist. Between Planes (ft)	Volume (ft ³)
A ₁	10.40		
		4.30	44.72
A ₂	10.40		
		15.43	136.94
A ₃	7.35		
		13.58	144.97
A ₄	14.00		
		15.46	196.11
A ₅	11.37		
		16.23	231.68
A ₆	17.18		
		13.81	208.74
A ₇	13.05		
		14.35	225.15
A ₈	18.33		
		12.74	234.10
A ₉	18.42		
		8.58	116.39
A ₁₀	8.71		

Total = 1,539 ft³
11,510 Gal.

SAYBOLT INC.

U. S. Headquarters
400 Seventh Ave.
Kew-Forest, NY 11367

MOTIVA ENTERPRISES LLC.
BROOKLYN, NY

TANK NO. 54
INRAGE TABLE

GAUGE HEIGHT 14'-5 3/4" LOCATED 1'-0" IN FROM TANK SHELL TO RIM OPPOSITE HINGE.

FT. IN.	GALLONS	FT. IN.	GALLONS	FT. IN.	GALLONS
0	21	6	2,280	12	4,542
1	50	7	2,312	13	4,575
2	81	8	2,349	14	4,607
3	112	9	2,374	15	4,638
4	144	10	2,405	16	4,670
5	175	11	2,437	17	4,701
6	206	12	2,468	18	4,733

SAFE FILL

INCH	GALLONS
0	21
1/8	25
1/4	28
3/8	32
1/2	36
5/8	38
3/4	42
1	46

Shell Additive
ALPHA TANK COMPANY INC.

Tanks For All Purposes - General Steel Plate Construction

1850 STEINWAY ST. - LONG ISLAND CITY, N. Y. 11105

Phone: 718 274-3700

TANK #51

NEW YORK CITY

5,000 GALLONS, 96" DIA. X 14'-6" LONG FUEL TANK

GAUGE MEASUREMENT CHART

INCHES	GALLONS	INCHES	GALLONS	INCHES	GALLONS
1	9	33	1,522	65	3,605
2	25	34	1,585	66	3,667
3	47	35	1,649	67	3,727
4	72	36	1,713	68	3,788
5	100	37	1,778	69	3,846
6	130	38	1,842	70	3,907
7	163	39	1,907	71	3,966
8	199	40	1,973	72	4,024
9	237	41	2,038	73	4,081
10	277	42	2,104	74	4,137
11	318	43	2,170	75	4,192
12	381	44	2,236	76	4,247
13	405	45	2,302	77	4,300
14	451	46	2,368	78	4,352
15	499	47	2,435	79	4,404
16	548	48	2,501	80	4,454
17	598	49	2,567	81-6'9"	4,502 SAFE FILL
18	649	50	2,633	82	4,550
19	701	51	2,700	83	4,596
20	755	52	2,761	84	4,641
21	810	53	2,832	85	4,684
22	864	54	2,898	86	4,725
23	921	55	2,963	87	4,765
24	978	56	3,029	88	4,802
25	1,035	57	3,094	89	4,838
26	1,094	58	3,160	90	4,871
27	1,153	59	3,224	91	4,902
28	1,213	60	3,288	92	4,930
29	1,274	61	3,352	93	4,955
30	1,335	62	3,416	94	4,977
31	1,397	63	3,480	95	4,993
32	1,460	64	3,542	96	5,002

0002

MOTIVA ENTERPRISES

06/24/2010 09:58 FAX 718 383 7970

Shell/Motiva 0009290

SAYBOLT INC.

U. S. Headquarters
400 Swanton Drive
Kearlworth, NJ 07033

MOTIVA ENTERPRISES LLC.
BROOKLYN, NY

TANK NO. 54
INNAGE TABLE

GAUGE HEIGHT 14'-5 3/4" LOCATED 1'-8" IN FROM TANK SHELL TO RIM OPPOSITE HINGE.

FT. IN.	GALLONS	FT. IN.	GALLONS	FT. IN.	GALLONS
0	21	6	2,280	12	4,544
1	50	1	2,312	1	4,576
2	81	2	2,343	2	4,607
3	112	3	2,374	3	4,638
4	144	4	2,405	4	4,670
5	175	5	2,437	5	4,701
6	206	6	2,468	6	4,733
7	237	7	2,500	7	4,764
8	268	8	2,531	8	4,795
9	300	9	2,562	9	4,827
10	331	10	2,593	10	4,859
11	362	11	2,625	11	4,890
12	394	12	2,656	12	4,922
13	426	13	2,687	13	4,953
14	458	14	2,719		
15	489	15	2,750		
16	521	16	2,781		
17	553	17	2,813		
18	585	18	2,844		
19	617	19	2,875		
20	649	20	2,906		
21	680	21	2,938		
22	711	22	2,969		
23	743	23	3,000		
24	774	24	3,032		
25	806	25	3,063		
26	837	26	3,095		
27	869	27	3,126		
28	901	28	3,158		
29	933	29	3,189		
30	964	30	3,221		
31	996	31	3,252		
32	1,028	32	3,284		
33	1,060	33	3,315		
34	1,091	34	3,347		
35	1,123	35	3,378		
36	1,154	36	3,410		
37	1,186	37	3,441		
38	1,217	38	3,473		
39	1,249	39	3,504		
40	1,279	40	3,536		
41	1,311	41	3,567		
42	1,342	42	3,599		
43	1,373	43	3,630		
44	1,404	44	3,662		
45	1,436	45	3,693		
46	1,467	46	3,725		
47	1,498	47	3,756		
48	1,530	48	3,788		
49	1,561	49	3,819		
50	1,592	50	3,851		
51	1,623	51	3,882		
52	1,655	52	3,914		
53	1,686	53	3,945		
54	1,717	54	3,977		
55	1,749	55	4,008		
56	1,780	56	4,040		
57	1,811	57	4,071		
58	1,842	58	4,103		
59	1,874	59	4,134		
60	1,905	60	4,166		
61	1,936	61	4,197		
62	1,968	62	4,229		
63	1,999	63	4,260		
64	2,030	64	4,292		
65	2,061	65	4,323		
66	2,093	66	4,355		
67	2,124	67	4,386		
68	2,155	68	4,418		
69	2,187	69	4,449		
70	2,218	70	4,481		
71	2,249	71	4,512		

SAFE FILL

←SAFE FILL

Mobil
Additive

INCH	GALLONS
0	21
1/8	25
1/4	28
3/8	32
1/2	36
5/8	39
3/4	43
7/8	46
1	50

FRACTIONS	
1/16	2
1/8	4
3/16	6
1/4	8
5/16	10
3/8	12
7/16	14
1/2	16
9/16	18
5/8	20
11/16	22
3/4	24
13/16	26
7/8	28
15/16	29
1	31

1. TANK SHELL HEIGHT: 13'-4"
2. DIAMETER: 8'-0"
3. 0'-2" CROWNED UP BOTTOM SIGHTED.
4. LIQUID HEAD STRESS APPLIED AT 25.0 API
5. TANK SHELL COMPUTED AT 80° F.

6. 0'-0" REPRESENTS VOLUME BELOW STRIKE POINT.
7. TABLE COMPUTED AS PER API MPMS CHAPTER 2.2A
8. FRACTIONS NOT APPLICABLE BELOW 0'-1"
9. SAFEFILL: 12'-0"

CHART IS CERTIFIED FOR THIS TANK ONLY.
COMPUTED BY: JF 09/26/02
STRAPPED BY: JPY & SK 08/23/02

SAYBOLT LP

O. Endres

THIS TABLE SUPERSEDES ALL TABLES ISSUED PRIOR TO 09/02

100/1001

MOTIVA ENTERPRISES.

06/24/2010 10:00 FAX 718 383 7970

Shell/Motiva 0009291

ANNEX 8.....REGULATORY COMPLIANCE / CROSS REFERENCE

The following pages contain information required by the regulations that act as documentation, authorization, or certification. Additionally, there are matrices with the specific regulatory requirement, and its corresponding section or page number.

8.1..... FACILITY RESPONSE PLAN

8.1.1..... Response Plan Cover Sheet

8.1.2..... Facility Substantial Harm Classification

8.1.3..... Determination of Worst-Case Discharge

8.1.4..... EPA Expanded Cross-Reference

8.2..... SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

8.2.1..... Legal Requirements for Preparation and Implementation Applicability

8.2.2..... Professional Engineer's Certification and Approval

8.2.3..... Terminal Management Certification

Log of Plan Review and Amendments

8.2.4..... Qualified Individuals Authority to Initiate Oil Spill Response

8.2.5..... Spill Prevention, Control, and Countermeasure Cross-Reference

8.3..... HAZARDOUS WASTE CONTINGENCY PLAN

8.3.1..... Distribution Letter to Local Agencies

8.3.2..... Regulatory Cross-Reference

8.4..... HAZARDOUS WASTE OPERATIONS EMERGENCY RESPONSE PLAN

8.4.1..... Regulatory Cross-Reference

8.5..... USCG Cross Reference

8.1.1.....Response Plan Cover Sheet

This cover sheet will provide EPA with basic information concerning the facility. It must accompany a submitted facility response plan. Explanations and detailed instructions can be found in Appendix F of 40 CFR 112.20. Please type or write legibly in black or blue ink. Public reporting burden for the collection of this information is estimated to vary from 1 hour to 270 hours per response in the first year, with an average of 5 hours per response. This estimate includes time for reviewing instructions searching existing data sources, gathering the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate of this information, including suggestions for reducing this burden to: Chief, Information Policy Branch, PM-223, US Environmental Protection Agency, 401 M St., SW, Washington, DC 20460; and to the office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

GENERAL INFORMATION	
Owner / Operator of Facility:	<u>Motiva Enterprises LLC</u>
Facility Name:	<u>Brooklyn Terminal</u>
Facility Address (street address or route):	<u>25 Paidge Avenue</u>
City, State, US Zip code:	<u>Brooklyn, NY 11222-1281</u>
Facility Phone Number:	<u>718-383-4066</u>
Latitude (Degrees: North): <u>40° 44' 15" N</u> Degrees, minutes, seconds	Longitude (Degrees: West): <u>74° 56' 45" W</u> Degrees, minutes, seconds
Dun & Bradstreet Number: <u>#023838670</u>	North American Industry Classification System (NAICS) Code: <u>424710</u>
Largest above-ground Fuel Storage Tank Capacity (Gallons): <u>450,000</u>	Maximum Storage Capacity (Gallons): <u>2,358,600</u>
Number of Aboveground Fuel Storage Tanks: <u>18</u>	Worst-case Discharge Amount (Gallons) <u>450,000</u>
Facility Distance to Navigable Water. Mark the appropriate line.	
0-1/4 mile <u>X</u> 1/4 - 1/2 mile _____ 1/2 - 1 mile _____ >1 mile _____	

Applicability of Substantial Harm Criteria

Does the Facility transfer oil over-water to or from vessels and does the Facility have a total oil storage capacity greater than or equal to 42, 000 gallons?

YES X

NO _____

Does the Facility have a total oil storage capacity greater than or equal to 1 million gallons and, within any storage area, does the Facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation?

YES _____

NO X

Does the Facility have a total oil storage capacity greater than or equal to 1 million gallons and is the Facility located at a distance (as calculated using the appropriate formula in Appendix C or a comparable formula) such that a discharge from the Facility could cause injury to fish and wildlife and sensitive environments?

YES X

NO _____

Does the Facility have a total oil storage capacity greater than or equal to 1 million gallons and is the Facility located at a distance (as calculated using the appropriate formula in Appendix C or a comparable formula) such that a discharge from the Facility would shut down a public drinking water intake?

YES _____

NO X

Does the Facility have a total oil storage capacity greater than or equal to 1 million gallons and has the Facility experienced a reportable oil spill in an amount greater than or equal to 10, 000 gallons within the last 5 years?

YES _____

NO X

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining information, I believe that the submitted information is true, accurate, and complete.

Signature:

James W. Lintz

Name:

James W. Lintz

Please type or print

Title:

Metropolitan Complex Manager

Date:

4-3-2008

8.1.2Facility Substantial Harm Classification

(This page reserved for substantial harm classification from EPA)

8.1.3Determination of Worst-Case Discharge

INSTRUCTIONS

The calculation of a worst-case discharge is used for emergency planning purposes and is required in 112.20 (h)(5)(A) for facility owners and operators who must prepare a response plan. When planning for the amount of resources and equipment necessary to respond to the worst-case discharge planning volume, adverse weather conditions should be taken into consideration. Owners and operators should determine the facility's worst-case discharge from either Part A for onshore storage facilities or Part B for onshore production facilities. The worksheet integrates a facility's use of secondary containment and its proximity to navigable waters. For production facilities, the presence of exploratory wells, production wells, and storage tanks must be considered in the calculation. Part B takes these additional factors into consideration and provides steps for their inclusion in the total worst-case volume. As defined in this part, onshore oil production facilities may include all wells, flow lines, separation equipment, storage facilities, gathering lines, and auxiliary non-transportation related-equipment and facilities in a single geographical oil or gas field operated by a single operator. Although a potential worst-case volume is dependent on the risk parameter that results in the higher volume.

Marine transportation-related transfer facilities that contain fixed onshore structures used for bulk oil storage are jointly regulated by both EPA and the U.S. Coast Guard (USCG) and are termed "complexes". Because the USCG also requires response plans from transportation-related facilities to address a worst-case discharge of oil, a separate calculation for the worst-case discharge volume for USCG facilities is included in Annex 3.D.3 and done according to 33 CFR §154.1029. All complexes must compare both calculations for worst-case discharge derived by EPA and USCG and plan for whichever volume is greater.

PART A WORST-CASE DISCHARGE CALCULATION FOR ONSHORE STORAGE FACILITIES

Part A of this worksheet is to be completed by owners or operators of SPCC-regulated facilities (excluding oil production facilities) if the facility meets the criteria as presented in Appendix C to this part or if it is determined by the RA that the facility could cause substantial harm to the environment.

If you are an owner or operator of a production facility, please proceed to Part B.

A.1. SINGLE TANK FACILITIES

For facilities containing only one aboveground storage, the worst-case volume equals the capacity of the storage tank.

- FINAL WORST-CASE VOLUME: N/A GAL
- Do not proceed further.

A.2. SECONDARY CONTAINMENT - MULTIPLE TANK FACILITIES

Are all aboveground storage tank or groups of aboveground storage tanks at the facility without adequate secondary containment?

N (Y/N)

A.2.1 If the answer is yes, the final worst-case volume equals the total aboveground oil storage capacity at the facility.

- (1) -FINAL WORST-CASE VOLUME: N (Y/N)
- (2) -Do not proceed any further.

A.2.2 If the answer is no, calculate the total aboveground capacity of tanks without adequate secondary containment. If all aboveground storage tanks or groups of aboveground storage tanks of the facility have adequate secondary containment, ENTER "0" (zero).

0 GAL

A.2.3 Calculate the capacity of the largest single aboveground oil storage tank within an adequate secondary containment area or the combined capacity of a group of aboveground oil storage tanks permanently manifolded together, whichever is greater, PLUS THE VOLUME FROM QUESTION A2.

FINAL WORST-CASE VOLUME.....450,000 GAL

- 1 "Storage facilities" represent all facilities subject to this part, excluding oil production facilities.
- 2 Secondary containment is defined in 112.7(e)(2) of the current rule. Acceptable methods and structures for containment are given in 112.7 (c)(1) of the current rule.
- 3 All complexes that are jointly regulated by EPA and the USCG must also calculate the worst-case discharge planning volume for the transportation related portion of the facility and plan for which ever volume is greater.

PART B: WORST-CASE DISCHARGE PLANNING VOLUME CALCULATION FOR ONSHORE PRODUCTION FACILITIES

Part B of this worksheet is to be completed by owners or operators of SPCC-regulated oil production facilities if they meet the criteria presented in Appendix C to this part, or if it is determined by the RA that the facility could cause harm. A production facility consists of all wells (producing and exploratory) and related equipment in a single geographical oil or gas field operated by a single operator.

B.1 SINGLE-TANK FACILITIES

- B.1.1 For facilities containing only one aboveground oil storage tank, the worst-case discharge planning volume equals the capacity of the aboveground oil storage tank plus the production volume of the well with the highest output at the facility. If adequate secondary containment (sufficiently large to contain the capacity of the aboveground oil storage tank plus sufficient freeboard to allow for precipitation) exists for the storage tank, multiply the capacity of the tank by 0.8.
- B.1.2 For facilities with production wells produced by pumping, if the rate of the well with the highest output is known and the number of days the facility is unattended can be predicted, then the production volume is equal to the pumping rate of the well multiplied by the greatest number of days the facility is unattended.
- B.1.3 If the pumping rate of the well with the highest output is estimated or the unattended is estimated then the production volume is determined from the pumping rate of the well multiplied by 1.5 times the greatest number of days that the facility has been or is expected to be unattended.
- B.1.4 Attachment D-1 to this appendix provides methods for calculating the production volume for explanatory wells and production wells producing under pressure.

- (1) - FINAL WORST-CASE VOLUME: N/A GAL
- (2) - Do not proceed further.

B.2 SECONDARY CONTAINMENT - MULTIPLE TANK FACILITIES

Are all aboveground storage tanks or groups of aboveground storage tanks at the facility without adequate secondary containment? No. The Brooklyn Terminal does provide for secondary containment.

- B.2.1 If the answer is yes, the final worst-case volume equals the total aboveground oil storage capacity without adequate secondary containment plus the volume of the well with the highest output at the facility.
- (1) For facilities with production wells producing by pumping. If the rate of the well with the highest output is known and the number of days the facility is unattended can be predicted, then the production volume is equal to the pumping rate of the well multiplied by the greatest number of days the facility is unattended.

- (2) If the pumping rate of the well with the highest output is estimated or the maximum number of days the facility is unattended is estimated, the production volume is determined from the pumping rate of the well multiplied by 1.5 times the greatest number of days that the facility has been or is expected to be unattended.
- (3) Attachment D-1 to this appendix provides methods for calculating production volumes for exploratory wells and production wells producing under pressure.
- (A) - FINAL WORST-CASE VOLUME: N/A GAL
- (B) - Do not proceed further.

B.2.2 If the answer is no, calculate the total aboveground capacity of tanks without adequate secondary containment. If all aboveground storage tanks or groups of aboveground storage tanks at the facility have adequate secondary containment, ENTER "0" (zero).

0 GAL

- B.2.3 Calculate the capacity of the largest single aboveground oil storage tank with an adequate secondary containment area or the combined capacity of a group of aboveground oil storage tanks permanently manifolded together, whichever is the highest, PLUS THE VOLUME FROM QUESTION B.2.6(b). Attachment D-1 provides methods for calculating the production volumes for exploratory wells and production wells producing under pressure.
- (A) - FINAL WORST-CASE VOLUME: N/A GAL
- (B) - Do not proceed further.

**TABLE 1 TO APPENDIX E
RESPONSE RESOURCE OPERATING CRITERIA OIL RECOVERY DEVICES**

<u>Operating Environment</u>	<u>Significant Wave Height</u>	<u>Sea State</u>
River	≤1 foot	1
Inland	≤3 feet	2
Great Lakes	≤4 feet	2-3
Ocean	≤6 feet	3-4

BOOM USE

Boom Property	River	Inland	Great Lakes	Ocean
Significant Wave Height	<1	<3	<4	≤6
Sea State	1	2	2-3	3-4
Boom height - in. (draft) plus freeboard)	10-18	18-42	18-42	≥42
Reserve Buoyancy to Weight Ratio	2:1	2:1	2:1	3:1 to 4:1
Total Tensile Strength - lbs.	4,500	15-20,000	15-20,000	≥20,000
Skirt Fabric Tensile Strength - lbs.	200	300	300	500
Skirt Fabric Tear Strength - lbs.	100	100	100	125

**TABLE 3
EMULSIFICATION FACTORS FOR OIL PRODUCT GROUPS**

NON-PERSISTENT OIL

GROUP 1 1.0

PERSISTENT OIL

GROUP 2 2.5

GROUP 3 3.0

GROUP 4 1.8

TABLE 4
ON-WATER OIL RECOVERY RESOURCE MOBILIZATION FACTORS

<u>Operating Area</u>	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 3</u>
River & Canals	.30	.40	.60
Inland / Nearshore / Great Lakes	.15	.25	.40
Offshore	.10	.165	.21

Note: These mobilization factors are for total resources mobilized; not incremental resources.

TABLE 5
RESPONSE CAPABILITY CAPS BY GEOGRAPHIC AREA

<u>February 18, 1993</u>	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 3</u>
All except rivers, canals, Great Lakes	10K	20K	40K
Great Lakes	5K	10K	20K
Rivers & Canals	1,500	3,000	6,000
<u>February 18, 1998</u>			
All except rivers, canals, & Great Lakes	12.5K	25K	50K
Great Lakes	6.35	12.3	25
Rivers & Canals	1,875	3,750	7,500

Note: The caps show cumulative overall effective daily recovery rate, not incremental increases. This table updated to conform to EPA Final Rule 40 CFR 112-July 1, 1994.

TABLE 2
REMOVAL CAPACITY PLANNING TABLE

Spill Location	Nearshore / Inland			River		
Sustainability of on-water recovery	4 days			3 days		
Oil Group	% Natural Dissipation	% Recovered Floating Oil	% Oil Onshore	% Natural Dissipation	% Recovered Floating Oil	% Oil Onshore
1 Nonpersistent Oils	80	20	10	80	10	10
2 Light Crudes and Fuels	50	50	30	40	15	45
3 Medium Crudes and Fuels	30	50	50	20	15	65
4* Heavy Crudes, Fuel Residuals	10	50	70	5	20	75

* For planning purposes, non-petroleum oil must be considered a Group 4 persistent oil.

Attachment 8.1.3.1

Worksheet for Determining Planning Volume for Response Resources for Worst-case Discharge Brooklyn Terminal

Part 1 Background Information

Step (A) Calculate Worst-Case Discharge in barrels (Appendix D)

10,714

Step (B) Oil Group** (Table 3 and Section 1.2 of this Appendix

1

Step (C) Geographic Area (choose one)

☒ X

Nearshore / Inland
/ Great Lakes

☐

or Rivers
and
Canals

Step (D) Percentages of Oil (Table 2)

% Lost to Natural Dissipation

80

(D1)

% Recovered Floating Oil

20

(D2)

% Oil Onshore

10

(D3)

Step (E1) On-Water Recovery

$\frac{\text{Step (D2)} \times \text{Step (A)}}{100}$

2,143

Step (E2) On-Shore Recovery

$\frac{\text{Step (D3)} \times \text{Step (A)}}{100}$

1,071

Step (F) Emulsification Factor (Table 3)

1.00

Step (G) On-Water Oil Recovery Resource Mobilization Factor (Table 4)

Tier 1

0.15

(G1)

Tier 2

0.25

(G2)

Tier 3

0.40

(G3)

**

Facilities storing multiple groups of oil should prepare a separate worksheet for each group that comprises 10% or more of the volume of the facility. All oil volumes or all oils must be totaled for percentage determinations.

Attachment 8.1.3.1 (continued)

Worksheet for Determining Planning Volume for Response Resources for Worst Case Discharge (continued)

Part II On-Water Recovery Capacity (barrels / day)

Tier 1	Tier 2	Tier 3
321	536	857
Step (E1) x (Step (F) x Step (G1)	Step (E1) x (Step (F) x Step (G2)	Step (E1) x (Step(F) x Step (G3)

Part III Shoreline Cleanup Volume (barrels / day)

1,071
Step (E2) x (Step(F)

**Part IV Response Capacity By Geographic Area (Table 5)
(Amount needed to be contracted for, barrels / day)**

Tier 1	Tier 2	Tier 3
12,500	25,000	50,000
(J1)	(J2)	(J3)

**Part V Amount needed to be identified, but not contracted for in advance
(barrels / day)**

Tier 1	Tier 2	Tier 3
0	0	0

Part II Tier 1 - Step (J1)

Part II Tier 2 - Step (J2)

Part II Tier 3 - Step (J3)

NOTE: To convert to gallons / day, multiply Part II-Part V by 42.

8.1.4..... EPA Expanded Cross-Reference (40 CFR 112.20)

BASED ON APPENDIX F FACILITY-SPECIFIC RESPONSE PLAN

	LOCATION
1.1 Emergency Response Action Plan (ERAP) consisting of:	
1. Qualified Individual Information	Core Plan
2. Emergency Notification Phone List	Core Plan
3. Spill Response Notification Form	Core Plan
4. Response Equipment List and Location	Core Plan
5. Response Equipment Testing & Development	OSRO dependent
6. Facility Equipment Testing & Deployment	Core Plan
7. Evacuation Plan	Core Plan, Diagram in Annex 1
8. Immediate Actions	Core Plan
9. Facility Actions	Core Plan
1.2 Facility Information including:	
1. Facility Name and Location	Introduction 1.2
2. Latitude and longitude	Introduction 1.2
3. Location and drainage to a Wellhead Protection Area	Introduction 1.2
4. Owner / Operator Information	Introduction 1.2
5. Qualified Individual name with authority to implement the Plan	Introduction 1.2, Core Plan 1.1.2
6. Date of oil storage start-up	Introduction 1.2
7. Description of current facility operations	Introduction 1.2
8. Dates and types of substantial expansions	Introduction 1.2
1.3 Emergency Response Information including:	
1. Notification Phone List & Notification Form	Core Plan 1.1.2, 1.1.3, Annex 2
2. Equipment List	Core Plan, 1.1.4
3. Equipment Testing / Deployment	OSRO dependent, Annex 11
4. Personnel	Core Plan, Annex 3a
5. Evacuation Plan	Core Plan 1.1.6, Annex 1, Figure 1.3
6. Qualified Individual Duties	Annex 3a, 3b
1.4 Hazard Evaluation including:	
1.4.1. Hazard Identification	Annex 7.1
1. List each aboveground tank and below ground tank.	Table 7.1
3.a. Identify each tank or SI that stores oil or hazardous materials.	Table 7.1
3.b&c. Substance, quantity stored.	Table 7.1
3.d. Tank type / surface, area, ;year.	Table 7.1

**EPA EXPANDED CROSS-REFERENCE
BASED ON APPENDIX F
FACILITY-SPECIFIC RESPONSE PLAN (Continued)**

	LOCATION
3.e. Maximum capacity.	Table 7.1
3.f. Record of tank failures / causes.	Table 7.1
4. Schematic drawing using above information on tanks.	Annex 1, Figure 1.2
5. Description of Facility Operations:	Annex 7
◆ Description of loading and unloading of transportation vehicles that risk the release of oil during transfer processes. Include all transfer processes for trucks, railroad cars, vessels.	Annex 7.1.8
◆ Identify operations that may present a risk of release.	Annex 7.1
◆ Secondary containment volume associated with each tank and transfer point at the facility.	Annex 7.2
◆ Normal daily throughput and effect on potential release volumes that a negative or positive change in that throughput may	Annex 7.6
1.4.2 Vulnerability Analysis: Potential effects to human health, property, environment of spill.	
1. Water intakes	Annex 3.d
2. Schools	Annex 3.d
3. Medical facilities	Annex 3.d
4. Residential areas	Annex 3.d
5. Businesses	Annex 3.d
6. Wetlands and environmentally sensitive areas	Annex 3.d
7. Fish and wildlife	Annex 3.d
8. Lakes and streams	Annex 3.d
9. Endangered flora and fauna	Annex 3.d
10. Recreational areas	Annex 3.d
11. Transportation routes (air, land, water)	Annex 3.d
12. Utilities	Annex 3.d
13. Economically sensitive areas including: terrestrially sensitive environments, aquatic environments, and unique habitats.	Annex 3.d
1.4.3 Analysis of the Potential for a Spill based on these factors:	
◆ Tank age,	Table 7.1, Annex 3d
◆ Spill history,	Annex 4.2; 3d
◆ Horizontal range of spill, and	Annex 3.d.4
◆ Vulnerability to natural disaster.	Annex 3.d.1

**EPA EXPANDED CROSS-REFERENCE
BASED ON APPENDIX F
FACILITY-SPECIFIC RESPONSE PLAN (Continued)**

	LOCATION
1.4.4 Spill History description including:	
1. Date of spill	Annex 4.2
2. Cause,	Annex 4
3. Material spilled,	Annex 4
4. Amount in gallons,	Annex 4
5. Amount that reached navigable waters,	Annex 4
6. Effectiveness and capacity of secondary containment,	Annex 4
7. Clean-up actions taken,	Annex 4
8. Steps taken to reduce recurrence,	Annex 4
9. Total storage capacity of tanks or impoundments from which spill occurred.	Annex 4
10. Enforcement actions,	Annex 4
11. Effectiveness of monitoring equipment, and	Annex 4
12. Description of how each spill was detected.	Annex 4
1.5 Response Scenarios information needed:	
1.5.1 Small spill / Medium Spill	Core Plan, Annex 3.d.4
◆ Response equipment to be used for each scenario.	Core Plan, Annex 3.d.4
◆ Mitigation and response actions to be used in each scenarios.	Core Plan, Annex 3.d.4
1.5.2 Worst-case scenario	Core Plan, Annex 3.d.4
1.6 Discharge Detection Systems including text on:	
1.6.1 Procedures and equipment used to detect spills, and types of spill detection by personnel	Annex 7.4-7.7
1.6.2 Automated spill detection and frequency of inspection of all systems	Annex 7.4 - 7.5.5; 7.7.1; 7.7.2
1.7 Plan Implementation covering:	
1.7.1 Response resources for small, medium, worst-case spills.	Annex 3.d; 3.d.3.3 - 3.d.5
1.7.1.1 Emergency plans of spill response	Core Plan, Annex 3.c; 3.d; 3.d.3.3 - 3.d.5
1.7.1.2 Additional response training	Core Plan, Annex 3.c; 3.d; 3.d.3.3 - 3.d.5
1.7.1.3 Additional contracted help	Core Plan, Annex 3.c; 3.d; 3.d.3.3 - 3.d.5
1.7.1.4 Access to additional response equipment / experts	Core Plan, Annex 3.c
1.7.1.5 Ability to implement the Plan including response training and practice drills	Annex 3.c.2; Annex 5
1.7.2 Disposal plans-description of how and where the facility intends to recover, reuse, decontaminate, or dispose of materials after a spill	Annex 3.d.5

**EPA EXPANDED CROSS-REFERENCE
BASED ON APPENDIX F
FACILITY-SPECIFIC RESPONSE PLAN (Continued)**

	LOCATION
1.7.3 Containment and drainage planning including:	Annex 3.c.3; Annex 7.1.5, 7.2
1.7.3.1 Available volume of containment	Annex 7 - Table 7.1; Annex 7.2.1
1.7.3.2 Route of drainage from storage and transfer areas,	Annex 7.1.5; Drainage Diagram in Annex 1
1.7.3.3 Construction materials of drainage troughs	NA
1.7.3.4 Type and number of valves and separators used in the drainage system,	Annex 7.1.5
1.7.3.5 Sump pump capacities	Annex 7.1.5
1.7.3.6 The containment capacity of weirs and booms, location of all,	NA
1.7.3.7 Other cleanup materials	OSRO dependent
1.8 Self-Inspection, Drills / Exercises and Response Training	
1.8.1 Facility self-inspection, including checklists and records of inspection, meeting logs, etc.	Annex 7.7.1
1.8.1.1 Tank Inspection	Annex 7.7
1.8.1.2 Response Equipment Inspection	Annex 7.7
1.8.1.3 Secondary Containment Inspection	Annex 7.7
1.8.2 Facility Drills / Exercises	Annex 5
◆ Internal Exercise	Annex 5
◆ QI notification drills	Annex 5
◆ Spill Management Team Tabletop Exercise	Annex 5
◆ Equipment Deployment Exercise	Annex 5
◆ Unannounced Drills	Annex 5
◆ External Exercises	Annex 5
◆ Area Exercises	Annex 5
1.8.3 Response Training	Annex 5
1.8.3.1 Personnel Response Training Logs	Annex 5
1.8.3.2 Discharge Prevention Meeting Logs	Annex 5
1.9 Diagrams and Plot Plans of the Facility	
1.9.1 Detailed Plot Plan	Core Plan 1.1.8; Annex 1, Figure 1.2
1.9.2 Site Drainage Plan Diagram	Annex 1
1.9.3 Site Evacuation Diagram	Annex 1
1.10 Security including:	
1.10.1 Emergency cut-off locations	Annex 3.e.2.3 Annex 1, Figure 1.2, Annex 7.4.2
1.10.2 Enclosures (e.g., fencing)	Annex 3.e.2.1

**EPA EXPANDED CROSS-REFERENCE
BASED ON APPENDIX F
FACILITY-SPECIFIC RESPONSE PLAN (Continued)**

	LOCATION
1.10.3 Guards, their duties, day and night,	Annex 3.e.2.6, Core Plan 1.1.6.3
1.10.4 Lighting,	Annex 3.e.2.5
1.10.5 Valve and pump locks	Annex 3.e.2.2
1.10.6 Pipeline	Annex 3.e.2
2.0 Response Plan Cover Sheet Information Including:	
◆ Facility Name	Annex 8.1.1
◆ Facility Address	Annex 8.1.1
◆ Facility Phone Number	Annex 8.1.1
◆ Latitude and Longitude	Annex 8.1.1
◆ Dun & Bradstreet Number	Annex 8.1.1
◆ Standard Industrial Classification (SIC) Code	Annex 8.1.1
◆ Largest Oil Storage Tank Capacity	Annex 8.1.1
◆ Maximum Oil Storage Capacity	Annex 8.1.1
◆ Number of Oil Storage Tanks	Annex 8.1.1
◆ Worst-Case Discharge Amount	Annex 8.1.1
◆ Facility Distance to Navigable Water	Annex 8.1.1
◆ Applicability of Substantial Harm Criteria	Annex 8.1.1
◆ Certification	Annex 8.1.1

8.2..... SPILL PREVENTION CONTROL AND COUNTERMEASURE (40 CFR 112.7)

8.2.1..... Legal Requirements for Preparation and Implementation Applicability

This is a Spill Prevention, Control, and Countermeasure Plan to be used by the Brooklyn Terminal in responding to and reporting a petroleum discharge or substantial threat of a petroleum discharge into the navigable waters or adjoining shorelines of the United States or the State of New York. The requirement for this Plan is found in the Code of Federal Regulations, Title 40, Part 112.

This Plan has been developed to fully address the regulatory requirements of the Federal Spill Prevention, Control and Countermeasure Regulation; U. S. EPA Final Rule for Oil Pollution Prevention; Non-Transportation Related On-Shore and Off-Shore Facilities (40 CFR 112 – as amended on November 13, 2009). When accompanied by the OPA-90 Plan, this document and the OPA-90 Plan fulfill the requirements of 40 CFR Part 112.

All facilities that have the potential to discharge harmful quantities of oil into or onto the navigable waters of the United States, which have more than 1,320 gallons of aboveground storage, or a total underground storage capacity which exceeds 42,000 gallons are required to have a Spill Prevention, Control, and Countermeasure Plan. This facility meets those criteria. Harmful quantities of oil are defined in 40 CFR 110 as a visible sheen on the surface of the water or shoreline, or which are in excess of permit quantities for those facilities that have a limit in their facility NPDES Permit.

As the owners or operators of this Facility, Motiva Enterprises LLC will maintain a complete copy of this Spill Prevention, Control, and Countermeasure portion of this Plan at the Facility and will make the Plan available to the Regional Administrator or authorized representative of the Environmental Protection Agency for on-site review during normal working hours. A complete copy is maintained at the Facility because the Facility is manned at least four (4) hours per day. A complete copy is maintained at the Facility because the Facility is manned at least four hours a day.

In the event that this facility discharges more than 1,000 gallons of oil into or upon the navigable waters of the United States or adjoining shorelines in a single event, or discharges more than 42 gallons of oil upon the navigable waters of the United States or adjoining shorelines in two reportable spill events within any twelve month period, the owner or operator of this facility will submit the following information to the Regional Administrator of the Environmental Protection Agency within 60 days.

1. Name of facility
2. Name of owner / operator
3. Location of facility
4. Maximum storage or handling capacity of the Facility and normal daily throughput
5. Corrective action and countermeasures including description of equipment repairs and replacements
6. Description and maps of facility
7. Cause of such discharge including failure analysis of the system
8. Additional prevention measures taken or contemplated
9. Other information as required by the RA pertinent to the Plan or discharge

8.2.2 Professional Engineer's Certification and Approval

PROFESSIONAL ENGINEER CERTIFICATION

By means of this Professional Engineer Certification, I hereby attest to the following:

- I am familiar with the requirements of 40 CFR Part 112 and have verified that this Plan has been prepared in accordance with the requirements of this Part.
- I or my agent have visited and examined the Facility(s).
- I have verified that this Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards.
- I have verified that the required inspection and testing procedures have been established as described in Annex 7.
- I have verified that the Plan is adequate for the Facility.
- My certification of this Plan in no way relieves the owner/operator of the Facility(s) of their duty to prepare and fully implement the Plan in accordance with the requirements of 40 CFR Part 112. I in no way assume any liability of whatsoever kind of nature by my certification.
- The owner/operator, by "Management Approval" located on the following page, acknowledges this certification and the compliance measures described herein.
- This certification is limited to the sections referenced in the Spill Prevention, Control, and Countermeasure Plan (40 CFR 112.7) cross reference table located in Section 8.2.5.

(Seal)



Registered Professional Engineer

A handwritten signature in black ink, appearing to read "Robert P. Perla", written over a horizontal line.

Robert P. Perla, P.E.
RPMS Consulting Engineers
State of New York
Registration No: 054709

Date: SEP 23 2010

8.2.3 Terminal Management Certifications

MANAGEMENT APPROVAL	
Owner/Operator responsible for Facility: <u>Motiva Enterprises LLC</u>	
● Facility Name and Location:	<u>Brooklyn Terminal</u> <u>25 Paidge Avenue</u> <u>Brooklyn, NY 11222-1281</u>
● By signature below, the Manager approves this Plan and acknowledges that the elements identified within this Plan have been implemented, including a commitment to expend money and resources to expeditiously control and cleanup oil spills.	
● This page may be used for the initial Management Approval or for subsequent change of management and/or change of designated person accountable.	
● This SPCC Plan will be implemented as herein described.	
Signature: <u>James W. Lintz</u>	Designated person accountable for oil spill prevention at the Facility:
Name: <u>James W. Lintz</u>	Name: <u>James W. Lintz</u>
Date: <u>4-3-2008</u>	Title: <u>Metropolitan Complex Mgr</u>
Title: <u>Metropolitan Complex Mgr.</u>	
● This SPCC Plan will be implemented as herein described.	
Signature: <u>James W. Lintz</u>	Designated person accountable for oil spill prevention at the Facility:
Name: <u>JAMES Lintz</u>	Name: <u>James Lintz</u>
Date: <u>10-20-2010</u>	Title: <u>Metropolitan Complex Mgr.</u>
Title: <u>Metropolitan Complex Mgr.</u>	
● This SPCC Plan will be implemented as herein described.	
Signature: _____	Designated person accountable for oil spill prevention at the Facility:
Name: _____	Name: _____
Date: _____	Title: _____
Title: _____	

8.2.3 Terminal Management Certifications

MANAGEMENT APPROVAL	
<p>Owner/Operator responsible for Facility: <u>Motiva Enterprises LLC</u></p>	
● Facility Name and Location:	<u>Brooklyn Terminal</u> <u>25 Paidge Avenue</u> <u>Brooklyn, NY 11222-1281</u>
<p>● By signature below, the Manager approves this Plan and acknowledges that the elements identified within this Plan have been implemented, including a commitment to expend money and resources to expeditiously control and cleanup oil spills.</p>	
<p>● This page may be used for the initial Management Approval or for subsequent change of management and/or change of designated person accountable.</p>	
<p>● This SPCC Plan will be implemented as herein described.</p>	
Signature: <u>James W. Lintz</u>	Designated person accountable for oil spill prevention at the Facility:
Name: <u>James W. Lintz</u>	Name: <u>James W. Lintz</u>
Date: <u>4-3-2008</u>	Title: <u>Metropolitan Complex Mgr</u>
Title: <u>Metropolitan Complex Mgr.</u>	
<p>● This SPCC Plan will be implemented as herein described.</p>	
Signature: _____	Designated person accountable for oil spill prevention at the Facility:
Name: _____	Name: _____
Date: _____	Title: _____
Title: _____	
<p>● This SPCC Plan will be implemented as herein described.</p>	
Signature: _____	Designated person accountable for oil spill prevention at the Facility:
Name: _____	Name: _____
Date: _____	Title: _____
Title: _____	

8.2.3.....Terminal Management Certification

MANAGEMENT APPROVAL

Owner/Operator responsible for Facility: Motiva Enterprises LLC

● Facility Name and Location: Brooklyn Terminal
25 Paidge Avenue
Brooklyn, NY 11222-1281

● By signature below, the Manager approves this Plan and acknowledges that the elements identified within this Plan have been implemented, including a commitment to expend money and resources to expeditiously control and cleanup oil spills.

● This page may be used for the initial Management Approval or for subsequent change of management and/or change of designated person accountable.

● This SPCC Plan will be implemented as herein described.

Signature: M.A. D'Antonio

Designated person accountable for oil spill prevention at the Facility:

Name: M.A. D'Antonio

Name: M.A. D'Antonio

Date: 10/10/03

Title: Complex Manager

Title: Complex Manager

● This SPCC Plan will be implemented as herein described.

Signature: M.A. D'Antonio

Designated person accountable for oil spill prevention at the Facility:

Name: M.A. D'Antonio

Name: M.A. D'Antonio

Date: 2/13/2008

Title: Complex Manager

Title: Complex Manager

● This SPCC Plan will be implemented as herein described.

Signature: _____

Designated person accountable for oil spill prevention at the Facility:

Name: _____

Name: _____

Date: _____

Title: _____

Title: _____

LOG OF PLAN REVIEW AND AMENDMENTS

NON TECHNICAL AMENDMENTS

Non-technical amendments are not certified by a Professional Engineer.

Examples of changes include, but are not limited to, phone numbers, name changes, or any non-technical text change(s).

TECHNICAL AMENDMENTS

- Technical amendments are certified by a Professional Engineer.
- Examples of changes include, but are not limited to, commissioning or decommissioning containers; replacement, reconstruction, or movement of containers; reconstruction, replacements, or installation of piping systems; construction or demolition that might alter secondary containment structures; changes or product or service; or revision of standard operation or maintenance procedures at a Facility.
- An amendment made under this section will be prepared within six (6) months of the change and implemented as soon as possible but not later than six (6) months following preparation of the amendment.

MANAGEMENT REVIEW

Management will review this SPCC Plan at least each five (5) years and document the review on the form below.

[illegible]

LOG OF PLAN REVIEW AND AMENDMENTS

NON TECHNICAL AMENDMENTS

Non-technical amendments are not certified by a Professional Engineer.

Examples of changes include, but are not limited to, phone numbers, name changes, or any non-technical text change(s).

TECHNICAL AMENDMENTS

- Technical amendments are certified by a Professional Engineer.
- Examples of changes include, but are not limited to, commissioning or decommissioning containers; replacement, reconstruction, or movement of containers; reconstruction, replacements, or installation of piping systems; construction or demolition that might alter secondary containment structures; changes or product or service; or revision of standard operation or maintenance procedures at a Facility.
- An amendment made under this section will be prepared within six (6) months of the change and implemented as soon as possible but not later than six (6) months following preparation of the amendment.

MANAGEMENT REVIEW

Management will review this SPCC Plan at least each five (5) years and document the review on the form below.

Review/ Amend Date	Signature	Amend Plan (will/will not)	Description of Review Amendment	Affected Page(s)	P.E. Certification (Y/N)
3/1/10	<i>[Signature]</i>	No	—	—	N

8.2.4..... Qualified Individuals Authority to Initiate Oil Spill Response – 10/98

Pursuant to the Oil Pollution Act of 1990 (OPA), State Oil Spill Response laws and Federal and State regulations under Federal and State Oil Spill Response statutes, authority to sign Notices of Federal Interest for an Oil Pollution Incident (or their equivalent), Notices of State Interest for an Oil Pollution Incident (or their equivalent), designation of responsible party for an oil spill, authority to approve witness statements, and authority to initiate oil spill response activities is hereby assigned and delegated to persons occupying and acting in the capacity of the positions as specified below in accordance with such facilities' Oil Spill Response Contingency Plans and/or the Company's Regional Response Teams.

1. At marketing terminals, Terminal Manager, Complex Manager, Superintendents, or in their absence, Assistance Terminal Managers, Terminal Supervisors, Terminal Operators, Regional Managers, Regional Response Team On-Scene Coordinator.
2. For all other locations, Manager, LSDR/HSE and Emergency Management, or any officer of the Company. Any employee of the Company serving on the Regional Response Teams or performing work required by the Regional Response Plans has necessary authority to perform their work in accordance with the objectives established with the Alliance of Shell and Saudi Refining, Inc. Limitations on approval amounts are governed by Motiva's Delegation of Authority.

8.2.5 Spill Prevention, Control, and Countermeasure Plan (40 CFR 112.3, 5, 7, 8) Cross-Reference

40 CFR § 112	BRIEF DESCRIPTION	SECTION
112.3	Requirements for preparation and implementation of Spill Prevention Control and Countermeasure Plan	---
(a,b,c)	Owners or operators ... and could reasonably be expected to have a discharge of oil as described...must prepare and implement a Plan...	Sec. III, Annex 8.2.1
(d)	A licensed Professional Engineer must review and certify a Plan for it to be effective...	Sec. III, Annex 8.2.2 (PE Certification)
(e)	Maintain a complete copy of the Plan at the facility if the facility is normally attended at least 4 hours per day, or at the nearest field office...	Sec. III Annex 8.2.1
112.5	Amendment of Spill Prevention Control and Countermeasures Plans by owners or operators	---
(a)	Amend the SPCC ...when there is a change in facility design, construction, operation or maintenance which materially affects the facility's potential for the discharge of oil...	Sec. III, Annex 8.2.3.a
(b)	...complete a review and evaluation of the SPCC at least once every five years... amend the SPCC within six months of the review...implement within six months of preparation of any amendment.	Sec. III, Annex 8.2.3.a
(c)	Have a Professional Engineer certify any technical amendment...	Sec. III, Annex 8.2.2
112.7	Guidelines for the preparation and implementation of a Spill Prevention Control and Countermeasures Plan	---
----	...must prepare a Plan...have full approval of management...in writing.	Sec. 1 Introduction 1.1 Sec. III, Annex 8.2.3
----	If the plan calls for additional facilities or procedures, methods, or equipment not yet fully operational, these items should be discussed in separate paragraphs, and the details of installation and operational start-up should be explained separately.	----
---	...follow the sequence specified (or cross-reference)...	Sec. III, Annex 8.2.5
(a)(2)	Comply with all applicable requirements in this part... [or] state reasons for non-conformance ... and describe alternate methods...	Sec. III, Annex 8.2.1
(a)(3)	Describe ... physical layout ... and include diagram	Sec. I, Intro. 1.2.7; Sec. II, Core Plan, Figure 1.2; Sec. III Annex 1 Fig 1.2
(a)(3)(i)	... [address in your Plan] .. the type of oil in each container and its ... capacity ...	Sec. III, Annex 7 Table 7-1
(a)(3)(ii)	... discharge prevention measures including routine handling of products ...	Sec. III, Annex 7.1.8
(a)(3)(iii)	...Drainage or discharge controls ... and procedures for control of a discharge ...	Sec. III, Annex 7.1.5, 7.1.6, 7.2.7
(a)(3)(iv)	Countermeasures for discharge discovery, response, and cleanup (both ... facility's ... and contractor)	Sec. II, Core Plan 1.1.7
(a)(3)(v)	Methods of disposal of recovered materials ...	Sec. III, Annex 3.d.6
(a)(3)(vi)	Contact list and phone numbers ...	Sec. II, Core Plan 1.1.2
(a)(4)	Relate information ... [on a discharge] ...	Sec. II, Core Plan 1.1.3
(a)(5)	Organize portions of the Plan ... that will make them readily usable....	Core Plan, Section Dividers
(b)	Where experience indicates a reasonable potential for equipment failure...include a prediction...	Sec. III, Annex 7 Table 7-1

8.2.5..... Spill Prevention, Control, and Countermeasure Plan (40 CFR 112.3, 5, 7, 8) Cross-Reference (Cont'd)

40 CFR § 112	BRIEF DESCRIPTION	SECTION
(c)(1)	Onshore facilities.	Sec. III, Annex 7.2.
(c)(1)(i)	Dikes, berms or retaining walls sufficiently impervious to contain spilled oil	Sec. III, Annex 7.2.2
(c)(1)(ii)	Curbing	Sec. III, Annex 7.2.3
(c)(1)(iii)	Culverting, gutters or other drainage systems	Sec. III, Annex 7.2.4
(c)(1)(iv)	Weirs, booms or other barriers	N/A
(c)(1)(v)	Spill diversion ponds	Sec. III, Annex 7.2.5
(c)(1)(vi)	Retention ponds	Sec. III, Annex 7.2.5
(c)(1)(vii)	Sorbent materials	Sec. III, Annex 7.2.6
(c)(2)	Offshore Facilities.	----
(c)(2)(i)	Curbing, drip pans	N/A
(c)(2)(ii)	Sumps and collection systems	N/A
(d)	If you determine that the installation of structures or equipment listed in paragraphs (c) and (h)(1) of this section...is not practicable...clearly explain in your Plan...and provide...	----
(d)(1)	<i>A strong oil spill contingency plan following... 40 CFR 109.</i>	Entire Plan
(d)(2)	A written commitment of manpower, equipment and materials required to expeditiously control and remove any harmful quantity of oil discharged.	Sec. III, Annex 8.2.3
(e)	<i>Inspections and records</i>	---
	...in accordance with written procedures that you or the certifying engineer develop...with the SPCC Plan for a period of three years.	Sec. III, Annex 7.7.2, 7.7.3.8
(f)	<i>Personnel, training and spill prevention procedures</i>	---
(f)(1)	...train your oil-handling personnel in the operation and maintenance of equipment to prevent the discharges...	Sec. III, Annex 5.2.2
(f)(2)	Designate a person...accountable for oil spill prevention...	Sec. III, Annex 8.2.3
(f)(3)	Schedule and conduct spill prevention briefings...highlight and describe known spill discharges...or failures, malfunctioning components, and recently developed precautionary measures.	Sec. III, Annex 5.2.3
(g)	<i>Security (excluding oil production facilities)</i>	Sec. III, Annex 3.3.2
(h)	<i>Facility tank car and tank truck loading/unloading rack</i>	----
(h)(1)	Where loading/unloading area drainage does not flow into a catchment basin or treatment facility designed to handle discharges, use a quick drainage system... ...design any containment system to hold at least maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded at the facility.	Sec. III, Annex 7.1.8.4
(h)(2)	Provide an interlocked warning light or physical barrier system, warning signs, wheel chocks, or vehicle brake to prevent vehicular departure before complete disconnect of flexible or fixed oil transfer lines.	Sec. III, Annex 7.1.8.4.b
(h)(3)	Prior to filling and departure of any tank car or tank truck, closely inspect for discharges the lowermost drain and all outlets of such vehicles should be closely examined for leakage, and if necessary, that they are tightened, adjusted, or replaced to prevent liquid leakage while in transit.	Sec. III, Annex 7.1.8.4.c
(i)	If a field-constructed aboveground container undergoes a repair, alteration, reconstruction, or change in service that might affect the risk of a discharge or failure due to brittle fracture...evaluate the container for risk...	Sec. III, Annex 7.7.3.4
(j)	In addition...include a complete discussion of conformance with applicable requirements...or any more stringent, with State rules, regulations and guidelines.	Sec. III, Annex 7.8

8.2.5..... Spill Prevention, Control, and Countermeasure Plan (40 CFR 112.3, 5, 7, 8) Cross-Reference (Cont'd)

40 CFR § 112	BRIEF DESCRIPTION	SECTION
(k)	<i>Qualified Oil-filled Operation Equipment</i>	---
(k)(1)	<i>Qualification Criteria – Reportable Discharge History:</i> The owner or operator...that has had no discharges as described in § 112.1(b) from any oil-filled operational equipment...; and	N/A
(k)(2)	<i>Alternative Requirements to General Secondary Containment.</i> If secondary containment is not provided for qualified oil-filled operational equipment pursuant to paragraph (c) of this section, the owner or operator of a facility with qualified oil-filled operational equipment must:	N/A
(k)(2)(i)	Establish and document the facility procedures for inspections or a monitoring program to detect equipment failure and/or a discharge; and	N/A
(k)(2)(ii)	Unless you have submitted a response plan under § 112.20, provide in your Plan the following:	N/A
(k)(2)(ii)(A)	An oil spill contingency plan following the provisions of part 109 of this chapter.	N/A
(k)(2)(ii)(B)	A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful.	N/A
112.8	<i>Spill Prevention, Control, and Countermeasure Plan requirements for onshore facilities (excluding production facilities)</i>	---
(a)	Meet the general requirements for the Plan listed under § 112.7, and...	---
(b)(1)	Restrain drainage from diked storage areas by valves or other positive means to prevent a spill...into the drainage system or inplant effluent treatment system, except where plan systems are designed to handle such leakage. You may empty diked areas by pumps or ejectors; however you must be manually activate these pumps...and inspect the condition of the accumulation before starting...	Sec. III, Annex 7.2.7, 7.2.8
(b)(2)	Use valves of manual, open-and-closed design... If facility drainage drains directly into water course...you must inspect and drain uncontaminated retained stormwater, as provided in...paragraphs (c)(3)(ii)(iii), and (iv).	Sec. III, Annex 7.2.7, 7.2.8
(b)(3)	Design facility drainage systems from undiked areas... to flow into ponds, lagoons or catchment basins, designed to retain oil or return it to the facility. You must not locate catchment basins in areas subject to periodic flooding.	Sec. III, Annex 7.1.6
(b)(4)	If...not engineered as in paragraphs (b)(3), equip the final discharge of all ditches with a diversion system that would...retain the oil in the facility.	Sec. III, Annex 7.1.6
(b)(5)	Where drainage waters are treated in more than one treatment unit... provide two "lift" pumps and permanently install at least one of the pumps. Whatever techniques are used, facility drainage systems engineer... to prevent a discharge as described in § 112.1(b) in case there is an equipment failure or human error...	Sec. III, Annex 7.2.7
(c)	<i>Bulk storage containers (onshore)</i>	---
(c)(1)	Not use a container for the storage of oil unless its material and construction are compatible with the material stored and conditions of storage...	Sec. III, Annex 7.3.1
(c)(2)	Construct all bulk storage container installations so that you provide a secondary means of containment for the entire contents of the largest single container plus sufficient freeboard to allow for precipitation. You must ensure that diked areas are sufficiently impervious to contain discharged oil.	Sec. III, Annex 7.2.1, 7.2.2
(c)(3)	Not allow drainage of uncontaminated rainwater from the diked area into a storm drain or discharge of an effluent discharge into an open water course, lake, or pond, bypassing the in-plant treatment system unless you:	Annex 7.2.7
(c)(3)(i)	Normally keep the bypass valve sealed closed.	Sec. III, Annex 7.2.7
(c)(3)(ii)	Inspect the retained rainwater to ensure that its presence will not cause a discharge as described in § 112.1(b).	Sec. III, Annex 7.2.7
(c)(3)(iii)	Open the bypass valve and reseal it following drainage...under responsible supervision.	Sec. III, Annex 7.2.7

8.2.5..... Spill Prevention, Control, and Countermeasure Plan (40 CFR 112.3, 5, 7, 8) Cross-Reference (Cont'd)

40 CFR § 112	BRIEF DESCRIPTION	SECTION
(c)(3)(iv)	Keep adequate records of such events.	Sec. III, Annex 7.2.7
(c)(4)	Protect any completely buried metallic storage tank installed on or after January 10, 1974 from corrosion by coatings or cathodic protection...	Sec. III, Annex 7.3.4
(c)(5)	Not use partially buried metallic tanks for the storage of oil should be avoided, unless the buried section of the shell is adequately coated...	Sec. III, Annex 7.3.5
(c)(6)	Test each aboveground container for integrity testing on a regular... Keep comparison records... In addition...frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas. Records of inspections and tests kept under usual and customary business practices will suffice for the purposes of this paragraph.	Sec. III, Annex 7.7
(c)(7)	Control leakage through defective internal heating coils by monitoring the steam return and exhaust lines...	Sec. III, Annex 7.3.7
(c)(8)	Engineer or update each container installation in accordance with good engineering practice to avoid discharges (and) provide at least one of the following devices:	---
(c)(8)(i)	High liquid level alarms with an audible or visual signal at a constantly attended operation or surveillance station. In smaller facilities, an audible air vent may suffice.	Sec. III, Annex 7.4.1
(c)(8)(ii)	High liquid level pump cutoff devices set to stop flow at a predetermined container content level.	Sec. III, Annex 7.4.2
(c)(8)(iii)	Direct audible or code signal communication between the container gauger and the pumping station.	Sec. III, Annex 7.4.3
(c)(8)(iv)	A fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges.	Sec. III, Annex 7.4.4
(c)(8)(v)	You must regularly test liquid level sensing devices to ensure proper operation.	Sec. III, Annex 7.4.1
(c)(9)	Observe effluent treatment facilities frequently enough to detect possible system upsets that could cause a discharge...	Sec. III, Annex 7.4.1
(c)(10)	Promptly correct visible discharges which result in a loss of oil from container including...seam, gaskets, piping, pumps, valves...	Sec. III, Annex 7.4.5
(c)(11)	Position or locate mobile or portable oil storage container to prevent a discharge as described in § 112.1(b)...furnish a secondary means of containment...for the largest single compartment or container with sufficient freeboard.	Sec. III, Annex 7.4.6
(d)	<i>Facility transfer operations, pumping, and facility process</i>	---
(d)(1)	Provide buried piping... installed or replaced on or after August 16, 2002, with a protective wrapping and coating...cathodically protect. If a section of buried line is exposed...carefully inspect it for deterioration. If you find corrosion damage, you must undertake additional examination and corrective action as indicated...	Sec. III, Annex 7.5.1
(d)(2)	Cap or blank-flange the terminal connection...and mark it as to origin when piping is not in service, or in standby service for an extended time.	Sec. III, Annex 7.5.3
(d)(3)	Properly design pipe supports to minimize abrasion and corrosion and allow for expansion and contraction.	Sec. III, Annex 7.5.4
(d)(4)	Regularly inspect all aboveground valves, piping, and appurtenances. ...also conduct integrity and leak testing on buried piping at the time of installation, modification, construction, relocation, or replacement.	Sec. III, Annex 7.7.1
(d)(5)	Warn all vehicles entering the facility to be sure that no vehicle will endanger above ground piping or other oil transfer operations.	Sec. III, Annex 7.5.6



U.S. ENVIRONMENTAL PROTECTION AGENCY SPCC FIELD INSPECTION AND PLAN REVIEW CHECKLIST

FOR USE AT ONSHORE FACILITIES (EXCLUDING PRODUCTION)

FACILITY INFORMATION			
FACILITY NAME: <u>Motiva Enterprises LLC Brooklyn Terminal</u>			
LAT:	LONG:	Section/Township/Range:	
ADDRESS: <u>25 Pudge Ave.</u>			
CITY: <u>Brooklyn</u>	STATE: <u>NY</u>	ZIP: <u>11222</u>	COUNTY: <u>Kings</u>
TELEPHONE: <u>718 383 4440</u>	FACILITY REPRESENTATIVE NAME: <u>Frank Signoriello</u>		
OWNER NAME: <u>Shell Oil</u>			
OWNER ADDRESS: <u>25 Pudge Ave.</u>			
CITY: <u>Brooklyn</u>	STATE: <u>NY</u>	ZIP: <u>11222</u>	
OWNER CONTACT PERSON: <u>Jim Lynet</u>			
TELEPHONE: <u>203 520 0403</u>	FAX: <u>718 383 7970</u>	EMAIL:	
FACILITY OPERATOR NAME (IF DIFFERENT FROM OWNER - IF NOT, PRINT "SAME"): <u>Same</u>			
OPERATOR ADDRESS:			
CITY:	STATE:	ZIP:	
TELEPHONE: <u>860 749 2839</u>	OPERATOR CONTACT PERSON: <u>Jennifer Botwell</u>		
FACILITY TYPE: <u>oil storage + distribution</u>	NAICS CODE:		
HOURS PER DAY FACILITY ATTENDED: <u>24 hr / 365 days</u>	TOTAL FACILITY CAPACITY: <u>52,000 BBLs</u>		
TYPE(S) OF OIL STORED: <u>Reg gas, premium gas + ethanol</u>			
LOCATED IN INDIAN COUNTRY? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO RESERVATION NAME:			

INSPECTION INFORMATION		
INSPECTION DATE: <u>9/29/10</u>	TIME: <u>12:00</u>	INSPECTION NUMBER:
LEAD INSPECTOR: <u>Margaret Chong</u>		
OTHER INSPECTOR(S):		

INSPECTOR ACKNOWLEDGMENT	
I performed an SPCC inspection at the facility specified above.	
INSPECTOR SIGNATURE: <u>Margaret Chong</u>	DATE: <u>9/29/10</u>
FACILITY RESPONSE PLAN (FRP) APPLICABILITY	
A non-transportation related onshore facility is required to prepare and implement an FRP as outlined in 40 CFR 112.20 if:	

112.3(g)(1)	The aggregate aboveground storage capacity is 10,000 gallons or less AND	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
112.3(g)(2)	The facility has had no single discharge as described in §112.1(b) exceeding 1,000 U.S. gallons, OR the facility has had no two discharges as described in §112.1(b) exceeding 42 U.S. gallons within any twelve-month period in the three years prior to the SPCC Plan self-certification date, or since becoming subject to the rule if the facility has been in operation for less than three years. (Note: Oil discharges that result from natural disasters, acts of war, or terrorism are not included in this qualification determination.)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IF YES TO BOTH OF THE ABOVE, THEN THE FACILITY IS CONSIDERED A QUALIFIED FACILITY: Complete relevant sections of this checklist and Appendix A.		
REQUIREMENTS FOR PREPARATION AND IMPLEMENTATION OF A SPCC PLAN—40 CFR 112.3		
Date facility began operations: 1945		
Date of initial SPCC Plan preparation: May 2003 to 70's Current Plan version (date/number): 4/3/2008		
112.3(a), (c)	For facilities (excluding farms) in operation prior to August 16, 2002, Plan amended to reflect 2002 SPCC requirements and changes implemented by July 1, 2009	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
	For facilities (excluding farms) beginning operation between August 17, 2002, and July 1, 2009, Plan prepared and fully implemented by July 1, 2009	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
112.3(b), (c)	For facilities beginning operation after July 1, 2009, Plan prepared and fully implemented before beginning operations	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
112.3(d)	<p>[2002 Rule Requirement] [Except for self-certified Plans]</p> <p>Professional Engineer certification includes statement that the PE attests:</p> <ul style="list-style-type: none"> PE is familiar with the requirements of 40 CFR part 112 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA PE or agent has visited and examined the facility <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA Plan is prepared in accordance with good engineering practice including consideration of applicable industry standards and the requirements of 40 CFR part 112 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA Procedures for required inspections and testing have been established <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA Plan is adequate for the facility <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA 	
	<p>[Requirement for facilities that began operation on or before August 16, 2002] [Except for self-certified Plans]</p> <p>Plans should include evidence that the PE:</p> <ul style="list-style-type: none"> Has examined the facility <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA Is familiar with the provisions of this part <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA Attests that the SPCC that Plan has been prepared in accordance with good engineering practices <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA 	
PE Name: Eric G. Polite License No.: 77462 State: NY Date of certification: 12-15-03		
112.3(e)	<p>[2002 Rule Requirement]</p> <p>Plan available onsite if facility is attended at least 4 hours per day (If facility is unattended, please note nearest field office contact information in comments section below)</p> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
	<p>[Interim requirement for facilities that began operation on or before August 16, 2002]</p> <p>Plan available onsite if facility is attended at least 8 hours per day (If facility is unattended, please note nearest field office contact information in comments section below)</p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	

<input checked="" type="checkbox"/> The facility transfers oil over water to or from vessels and has a total oil storage capacity greater than or equal to 42,000 gallons, <u>OR</u>	
The facility has a total oil storage capacity of at least 1 million gallons, and at least one of the following is true: <ul style="list-style-type: none"> <input type="checkbox"/> The facility does not have secondary containment sufficiently large to contain the capacity of the largest aboveground tank plus sufficient freeboard for precipitation. <input type="checkbox"/> The facility is located at a distance such that a discharge could cause injury to fish and wildlife and sensitive environments. <input type="checkbox"/> The facility is located such that a discharge would shut down a public drinking water intake. <input type="checkbox"/> The facility has had a reportable discharge greater than or equal to 10,000 gallons in the past 5 years. 	
Facility has FRP: <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	FRP Number: <u>200128</u>
Facility has a completed and signed copy of Appendix D, Attachment C-II, "Certification of the Applicability of the Substantial Harm Criteria." <input type="checkbox"/> Yes <input type="checkbox"/> No	
Comments:	

SPCC GENERAL APPLICABILITY—40 CFR 112.1	
IS THE FACILITY REGULATED UNDER 40 CFR part 112? The completely buried oil storage capacity is over 42,000 gallons, <u>OR</u> the aggregate aboveground oil storage capacity is over 1,320 gallons	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
AND	
The facility is a non-transportation-related facility engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, using, or consuming oil and oil products, which due to its location could reasonably be expected to discharge oil into or upon the navigable waters of the United States (as defined in 40 CFR 110.1).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
AFFECTED WATERWAY(S): <u>Newton Creek</u>	DISTANCE: <u>200 ft</u>
PATH: <u>Direct</u>	
Note: The following storage capacity is not considered in determining applicability of SPCC requirements: <ul style="list-style-type: none"> • Completely buried tanks subject to all the technical requirements of 40 CFR part 280 or a state program approved under 40 CFR part 281. • Equipment subject to the authority of the U.S. Department of Transportation, U.S. Department of the Interior, or Minerals Management Service, as defined in Memoranda of Understanding dated November 24, 1971, and November 8, 1993. • Any facility or part thereof used exclusively for wastewater treatment (production, recovery or recycling of oil is not considered wastewater treatment). • Containers smaller than 55 gallons. • Permanently closed containers. • Motive power containers 	
Does the facility have an SPCC Plan?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Comments: <u>Plan is being updated</u>	
SPCC Qualified Facility APPLICABILITY—40 CFR 112.3(g) [2006 Rule Provision]	

Comments:

AMENDMENT OF SPCC PLAN BY REGIONAL ADMINISTRATOR (RA)—40 CFR 112.4

- 112.4(a)** Has the facility discharged more than 1,000 gallons of oil in a single reportable discharge or more than 42 gallons in each of two reportable discharges in any 12-month period (see 40 CFR part 110)? Note: A reportable discharge is a discharge as described in §112.1(b). ☐ Yes ☒ No
- If yes, was information submitted to the RA as required in §112.4(a)? ☐ Yes ☐ No ☒ NA
 - Date(s) of reportable discharge(s): ☐ Yes ☐ No
 - Were the discharges reported to the NRC?
- 112.4(d), (e)** Have changes required by the RA been implemented in the Plan and/or facility? ☐ Yes ☐ No ☒ NA

Comments:

No discharge

AMENDMENT OF SPCC PLAN BY THE OWNER OR OPERATOR—40 CFR 112.5

- 112.5(a)** Has there been a change at the facility that materially affects the potential for a discharge? ☐ Yes ☒ No
- If yes, was the Plan amended within six months of the change? ☐ Yes ☐ No
- 112.5(b)** Review and evaluation of the Plan completed at least once every 5 years? ☒ Yes ☐ No ☐ NA
- Following Plan review, and if amendment was required, was Plan amended within six months to include more effective prevention and control technology, if available? ☒ Yes ☐ No ☐ NA
- [2002 Rule Requirement]*
- Amendments implemented within six months of any Plan amendment? ☒ Yes ☐ No ☐ NA
- Plan review and evaluation documented in Plan? ☒ Yes ☐ No ☐ NA
- 112.5(c)** Professional Engineer certification of any technical Plan amendments in accordance with §112.3(d) *[Except for self-certified Plans]* ☐ Yes ☐ No ☐ NA

Name:

License No.:

State:

Date of certification:

Reason for amendment:

Amendments implemented within six months of any Plan amendment

☐ Yes ☐ No ☐ NA

Comments:

Amendment is process now. New plan will be available

GENERAL SPCC REQUIREMENTS—40 CFR 112.7		PLAN	FIELD
Management approval at a level of authority to commit the necessary resources to fully implement the Plan		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Name: <u>James S. W. Lintz</u>	Title: <u>Metro Police Complex Mgr</u>	Date: <u>4-3-08</u>	
Plan follows sequence of the rule or provides a cross-reference of requirements in the Plan and the rule		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
If Plan calls for facilities, procedures, methods, or equipment not yet fully operational, details of their installation and start-up are discussed (Note: Relevant for inspection evaluation and testing baselines.)		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
112.7(a)(2)	If there are deviations from the requirements of the rule, the Plan states reasons for nonconformance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	
	Alternative measures described in detail and provide equivalent environmental protection (Note: Inspector should document if the environmental equivalence is implemented in the field)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
Describe each deviation and reasons for nonconformance <u>Plan refers to main Contingency Plan for all Requirements</u>			
[2002 Rule Requirement]			
112.7(a)(3)	Plan includes diagram with location and contents of all regulated containers (including completely buried tanks otherwise exempt from the SPCC requirements), transfer stations, and connecting pipes (Note in comments any discrepancies between the diagram and what is observed in the field)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
112.7(a)(3)	Plan addresses each of the following:		
(i)	For each container, type of oil and storage capacity (see Appendix B)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
(ii)	Discharge prevention measures, including procedures for routine handling of products	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
(iii)	Discharge or drainage controls, such as secondary containment around containers, and other structures, equipment, and procedures for the control of a discharge	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
(iv)	Countermeasures for discharge discovery, response, and cleanup (both facility's and contractor's resources)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
(v)	Methods of disposal of recovered materials in accordance with applicable legal requirements	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
(vi)	Contact list and phone numbers for the facility response coordinator, National Response Center, cleanup contractors contracted to respond to a discharge, and all Federal, State, and local agencies who must be contacted in the case of a discharge as described in §112.1(b)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
[2002 Rule Requirement]			
112.7(a)(4)	Plan includes information and procedures that enable a person reporting a discharge as described in §112.1(b) to relate information on the exact address or location and phone number of the facility; the date and time of the discharge; the type of material discharged; estimates of the total quantity discharged; estimates of the quantity discharged as described in §112.1(b); the source of the discharge; a description of all affected media; the cause of the discharge; any damages or injuries caused by the discharge; actions being used to stop, remove, and mitigate the effects of the discharge; whether an evacuation may be needed; and the names of individuals and/or organizations who have also been contacted (Not required if a facility has an FRP)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
[2002 Rule Requirement]			
112.7(a)(5)	Plan organized so that portions describing procedures to be used when a discharge occurs will be readily usable in an emergency (Not required if a facility has an FRP)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	

GENERAL SPCC REQUIREMENTS—40 CFR 112.7.		PLAN	FIELD
112.7(b)	Plan includes a prediction of the direction, rate of flow, and total quantity of oil that could be discharged for each type of major equipment failure where experience indicates a reasonable potential for equipment failure	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
112.7(c)	Appropriate containment and/or diversionary structures or equipment provided to prevent a discharge as described in §112.1(b), except as provided in 112.7(k) of this section for qualified operational equipment, before cleanup occurs. The entire containment system, including walls and floors, are capable of containing oil and are constructed to prevent escape of a discharge from the containment system before cleanup occurs (1) For onshore facilities, one of the following or its equivalent: (i) dikes, berms, or retaining walls sufficiently impervious to contain oil, (ii) curbing, (iii) culverting, gutters or other drainage systems, (iv) weirs, booms or other barriers, (v) spill diversion ponds, (vi) retention ponds, or (vii) sorbent materials (See Appendix B)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
112.7(d)	Determination(s) of impracticability of secondary containment	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
If YES:	Is the impracticability of secondary containment clearly demonstrated?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
	<i>[2002 Rule Requirement]</i> For bulk storage containers, periodic integrity testing of containers and leak testing of the valves and piping associated with the container is conducted	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
	Unless facility has FRP: (1) Contingency Plan following 40 CFR part 109 (see Appendix D checklist) is provided <u>AND</u>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	
	(2) Written commitment of manpower, equipment, and materials required to control and remove any quantity of oil discharged that may be harmful	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Comments concerning impracticability determination(s) for secondary containment: FRP Plan			
Other comments:			

GENERAL SPCC REQUIREMENTS—40 CFR 112.7		PLAN	FIELD
112.7(e)	Inspections and tests conducted in accordance with written procedures	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	Record of inspections or tests signed by supervisor or inspector and kept with Plan for at least 3 years (see Appendix C checklist)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
112.7(f) Personnel, training, and oil discharge prevention procedures [1973 Rule: 112.7(e)(10)]			
(1)	Training of oil-handling personnel in operation and maintenance of equipment to prevent discharges; discharge procedure protocols; applicable pollution control laws, rules and regulations; <u>general facility operations and contents of SPCC Plan</u> <i>yearly</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(2)	Person designated as accountable for discharge prevention at the facility	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
[2002 Rule Requirement]		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(3)	Discharge prevention briefings conducted at least once a year for oil handling personnel		
[Interim requirement for facilities that began operation on or before August 16, 2002]		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(3)	Spill prevention briefings scheduled and conducted at intervals frequent enough to assure adequate understanding of the SPCC Plan for that facility.		
112.7(g) Security (excluding production facilities) [1973 Rule: 112.7(e)(9)] [Except self-certified Plans]			
(1)	Facility fully fenced and gates are locked and/or guarded when facility is unattended	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(2)	Master flow and drain valves and any other valves permitting direct outward flow of the container's contents to the surface have adequate security measures so that they remain in the closed position when in non-operating or non-standby status	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(3)	Pump starter controls locked in "off" position and accessible only to authorized personnel when in non-operating/non-standby status	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(4)	Loading/unloading connections of oil pipelines or facility piping securely capped or blank-flanged when not in service or when in standby service for an extended period of time, including piping that is emptied of liquid content either by draining or by inert gas pressure	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(5)	Adequate facility lighting commensurate with the type and location of the facility that assists in the discovery of discharges occurring during hours of darkness and to prevent discharges occurring through acts of vandalism	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Comments: <i>Plan refers to Master Contingency Plan</i>			
112.7(h) Tank car and tank truck loading/unloading rack [1973 Rule: 112.7(4)]			
Note that a tank car/truck loading/unloading rack must be present for §112.7(h) to apply			
(1)	Does loading/unloading area (the location adjacent to the loading or unloading rack) drainage flow to catchment basin or treatment facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No • If NO, quick drainage system used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
	Containment system holds capacity of the largest single compartment of a tank car/truck loaded/unloaded at the facility	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(2)	Physical barriers, warning signs, wheel chocks, or vehicle brake interlock system in loading/unloading areas (the location adjacent to the loading or unloading rack) to prevent vehicles from departing before complete disconnection of flexible or fixed oil transfer lines	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(3)	Lower-most drains and all outlets on tank cars/trucks inspected prior to filling/departure, and, if necessary ensure that they are tightened, adjusted, or replaced to prevent liquid discharge while in transit	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA

GENERAL SPCC REQUIREMENTS—40 CFR 112.7		PLAN	FIELD
Comments:			
112.7(i) Brittle fracture evaluation of field-constructed aboveground containers [2002 Rule Requirement]			
Brittle fracture evaluation is conducted after tank repair/alteration/change in service that might affect the risk of a discharge or after a discharge/failure due to brittle fracture or other catastrophe, and appropriate action taken as necessary: (for field-constructed aboveground containers)		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
112.7(j) State rules, regulations and guidelines and conformance with applicable sections of 40 CFR part 112 [1973 Rule: 112.7(e)]			
Discussion of conformance with applicable more stringent State rules, regulations, and guidelines and other effective discharge prevention and containment procedures listed in 40 CFR part 112		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
112.7(k) Qualified oil-filled operational equipment secondary containment option [2006 Rule Amendment]			
(1)	Has a single reportable discharge as described in §112.1(b) from any oil-filled operational equipment exceeding 1,000 U.S. gallons occurred within any 12-month period within the three years prior to Plan certification date?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
	Have two reportable discharges as described in §112.1(b) from any oil-filled operational equipment each exceeding 42 U.S. gallons occurred within any 12-month period within the three years prior to Plan certification date?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
	<ul style="list-style-type: none"> If YES for either, secondary containment is required. (Note: Oil discharges that result from natural disasters, acts of war, or terrorism are not included in this qualification determination.) See 112.7(c). 		
If NO and no secondary containment is provided	(2)(i) Facility procedure for inspections/monitoring program is established and documented	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
	(2)(ii) Unless facility has FRP: Contingency plan following 40 CFR part 109 (see Appendix D checklist) is provided AND	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
	Written commitment of manpower, equipment, and materials required to control and remove any quantity of oil discharged that may be harmful	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
Comments: FRP plan available No spill history			

ONSHORE FACILITIES (EXCLUDING PRODUCTION)—112.8/112.12		PLAN	FIELD
112.8(b)/112.12(b) Facility Drainage [1973 Rule: 112.7(e)(1)]			
(1)	Drainage from diked storage areas is restrained by valves, OR manually activated pumps or ejectors are used and the condition of the accumulation is inspected prior to discharge to ensure no oil will be discharged.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(2)	Valves from diked storage areas are manual, open-and-closed design (not flapper-type drain valves)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
	If drainage is released directly to a watercourse and not into an onsite wastewater treatment plant, storm water inspected per §112.8(c)(3)(ii), (iii), and (iv) or §112.12(c)(3)(ii), (iii), and (iv)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
(3)	Drainage from undiked areas with a potential for discharge designed to flow into ponds, lagoons, or catchment basins to retain oil or return it to facility. Catchment basin located away from flood areas.*	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
(4)	If facility drainage not engineered as in (b)(3), the facility is equipped with a diversion system to retain oil in the facility in the event of a discharge.*	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA

ONSHORE FACILITIES (EXCLUDING PRODUCTION)—112.8/112.12		PLAN	FIELD
(5) Are facility drainage waters continuously treated in more than one treatment unit and pump transfer is needed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If YES:			
• Two "lift" pumps available and at least one permanently installed		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
• Facility drainage systems engineered to prevent a discharge as described in §112.1(b) in the case of equipment failure or human error		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments: <i>drainage is observed prior to treatment w/ oil/water separator — then released — also observed at outfall.</i>			
* These provisions apply only when a facility drainage system is used for containment; otherwise mark NA.			
112.8(c)/112.12(c) Bulk Storage Containers [1973 Rule: 112.7(e)(2)] If bulk storage containers are not present, mark this section Non Applicable (NA). If present, complete this section and Appendix B of this checklist)			
(1) Containers compatible with material stored and conditions of storage such as pressure and temperature	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(2) Except for mobile refuelers, construct secondary containment to hold capacity of largest container and sufficient freeboard for precipitation	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Diked areas sufficiently impervious to contain discharged oil	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Alternatively, any discharge to a drainage trench system will be safely confined in a facility catchment basin or holding pond	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(3) Is there drainage of uncontaminated rainwater from diked areas into a storm drain or open watercourse? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If YES:			
(i) Bypass valve normally sealed closed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(ii) Retained rainwater is inspected to ensure that its presence will not cause a discharge as described in §112.1(b)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(iii) Bypass valve opened and resealed under responsible supervision	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(iv) Adequate records of drainage are kept; for example, records required under permits issued in accordance with 40 CFR 122.41(j)(2) and (m)(3)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(4) For completely buried metallic tanks installed on or after January 10, 1974 (if not exempt from SPCC regulation because subject to all of the technical requirements of 40 CFR part 280 or 281):			
• Corrosion protection with coatings or cathodic protection compatible with local soil conditions	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
• Regular leak testing conducted	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
(5) Partially buried or bunkered metallic tanks protected from corrosion with coatings or cathodic protection compatible with local soil conditions	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA

ONSHORE FACILITIES (EXCLUDING PRODUCTION)—112.8/112.12		PLAN	FIELD
Comments:			
[Except for self-certified Plans]	(6) [2002 Rule Requirement] Aboveground containers integrity tested by visual inspection and another technique such as hydrostatic testing, radiographic testing, ultrasonic testing, acoustic emissions testing, or another system of non-destructive shell testing on a regular schedule and whenever material repairs are made	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
	[Interim requirement for facilities that began operation on or before August 16, 2002] Aboveground tanks integrity tested using such techniques as hydrostatic testing, visual inspection or a system of non-destructive shell thickness testing.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
	Container supports and foundations regularly inspected	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
	Outside of containers frequently inspected for signs of deterioration, discharges, or accumulation of oil inside diked areas	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
	Records of inspections and tests maintained	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(7)	Leakage through defective internal heating coils controlled: <ul style="list-style-type: none"> Steam returns and exhaust lines from internal heating coils that discharge into an open water source are monitored for contamination, OR Steam returns and exhaust lines pass through a settling tank, skimmer, or other separation or retention system 	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
(8)	Each container is equipped with at least one of the following for liquid level sensing: (i) high liquid level alarms with an audible or visual signal at a constantly attended operation or surveillance station, or audible air vent in smaller facilities, (ii) high liquid level pump cutoff devices set to stop flow at a predetermined container content level, (iii) direct audible or code signal communication between container gauger and pumping station, (iv) fast response system (such as digital computers, telepulse, or direct vision gauges) <u>and a person is present to monitor gauges and the overall filling of bulk storage containers</u> , (v) liquid level sensing devices regularly tested to ensure proper operation	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <i>every tank</i>
(9)	Effluent treatment facilities observed frequently enough to detect possible system upsets that could cause a discharge as described in §112.1(b)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(10)	Visible discharges which result in a loss of oil from the container, including but not limited to seams, gaskets, piping, pumps, valves, rivets, and bolts are promptly corrected and oil in diked areas is promptly removed <i>Leak log</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(11)	Mobile or portable containers positioned to prevent a discharge as described in §112.1(b).	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
	Mobile or portable containers (excluding mobile refuelers) have secondary containment with sufficient capacity to contain the largest single compartment or container <u>and sufficient freeboard to contain precipitation</u>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA

ONSHORE FACILITIES (EXCLUDING PRODUCTION)—112.8/112.12		PLAN	FIELD
Comments:			
112.8(d)/112.12(d) Facility transfer operations, pumping, and facility process [1973 Rule: 112.7(e)(3)]			
(1)	[2002 Rule Requirement] Buried piping installed or replaced on or after August 16, 2002 has protective wrapping or coating	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
	Buried piping installed or replaced on or after August 16, 2002 is cathodically protected or otherwise satisfies corrosion protection standards for piping in 40 CFR part 280 or 281	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
	[Interim requirement for facilities that began operation on or before August 16, 2002] Buried piping has protective wrapping or coating and is cathodically protected if soil conditions warrant.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
	Exposed buried piping is inspected for deterioration and corrosion damage is examined and corrected	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
(2)	Piping terminal connection at the transfer point is marked as to origin and capped or blank-flanged when not in service or in standby service for an extended time.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(3)	Pipe supports are properly designed to minimize abrasion and corrosion and allow for expansion and contraction	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
(4)	Aboveground valves, piping, and appurtenances such as flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces are inspected regularly	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
	[2002 Rule Requirement] Integrity and leak testing conducted on buried piping at time of installation, modification, construction, relocation, or replacement	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
(5)	Vehicles warned so that no vehicle endangers aboveground piping and other oil transfer operations	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA

all Buried piping has been filled
w/ concrete + cut. Not used.

ONSHORE FACILITIES (EXCLUDING PRODUCTION)—112.8/112.12	PLAN	FIELD
<p>Comments:</p>		

[illegible]

Qualified Facilities Checklist

Appendix A: Qualified Facility Plan Requirements

Complete this Appendix only if the facility is a "qualified facility" as defined in §112.3(g). A qualified facility's Plan, whether certified by a PE or self-certified, must comply with all of the applicable requirements of §112.7 and subparts B and C of 40 CFR Part 112 referenced earlier in this checklist.

112.6-Qualified Facility Plan Requirements	Yes	No	NA
(a) Did the owner/operator of the qualified facility self-certify the SPCC Plan?			
<i>If NO, see requirements for 112.3(d) above. If YES, did the owner/operator certify in the Plan that:</i>			
(1) He or she is familiar with the requirements of 40 CFR part 112.			
(2) He or she has visited and examined the facility.			
(3) The Plan has been prepared in accordance with accepted and sound industry practices and standards.			
(4) Procedures for required inspections and testing have been established.			
(5) The Plan is being fully implemented.			
(6) The facility meets the qualification criteria set forth under §112.3 (g).			
(7) The Plan does not deviate from any requirements as allowed by §112.7(a)(2) and 112.7(d), except as described under §112.6(c).			
(8) Management has given full approval of the Plan and necessary resources have been committed for the Plan's full implementation.			
(b) Did the owner/operator self-certify any of the Plan's technical amendments?			
<i>If YES: Is the certification of any technical amendments in accordance with the provisions above (§112.6(a))?</i>			
(c)(1) and (d)(1) Environmental Equivalence. For each alternative measure allowed under §112.7(a)(2), the Plan is accompanied by a written statement by a PE that states the reason for nonconformance and describes the alternative method and how it provides equivalent environmental protection in accordance with §112.7(a)(2).			
(c)(2) and (d)(1) Impracticability. For each determination of impracticability of secondary containment pursuant to §112.7(d), the Plan clearly explains why secondary containment measures are not practicable at this facility and provides the alternative measures required in §112.7(d) in lieu of secondary containment.			
(c)(3) Security. The Plan contains one of the following: (i) The Plan complies with requirements under §112.7(g), OR (ii) The Plan complies with the requirements under §112.6(c)(3)(ii): Plan describes how the owner/operator secures and controls access to the oil handling, processing and storage areas; secures master flow and drain valves; prevents unauthorized access to starter controls on oil pumps; secures out-of-service and loading/unloading connections of oil pipelines; addresses the appropriateness of security lighting to both prevent acts of vandalism and assist in the discovery of oil discharges.			
(c)(4) Bulk Storage Containers. The Plan contains one of the following: (i) The Plan complies with the requirements under §§112.8(c)(6) or 112.12(c)(6), as applicable; OR (ii) The Plan complies with the requirements under §112.6(c)(4)(ii): <ul style="list-style-type: none"> Aboveground containers, supports and foundations tested for integrity on a regular schedule and whenever repairs are made. Appropriate qualifications for personnel performing tests and inspections have been determined in accordance with industry standards. The frequency and type of testing and inspections have been determined in accordance with industry standards, taking into account container size, configuration and design. Container supports and foundations regularly inspected Outside of containers frequently inspected for signs of deterioration, discharges, or accumulation of oil inside diked areas Records of inspections and tests maintained 			
(d) Did a PE certify a portion of a qualified facility's self-certified Plan? <i>If YES, the PE must certify in the Plan that:</i>			
(d)(2) (i) He/she is familiar with the requirements of 40 CFR Part 112. (ii) He/she or a representative agent has visited and examined the facility. (iii) The alternative method of environmental equivalence in accordance with §112.7(a)(2) or the determination of impracticability and alternative measures in accordance with §112.7(d) is consistent with good engineering practice, including consideration of applicable industry standards, and with the requirements of 40 CFR Part 112.			

(b)(1) If a PE certified a portion of the Plan, did a PE certify any technical amendments that affect this portion of the Plan?			
Comments:			

SPCC INSPECTION AND TESTING CHECKLIST

Appendix C: Required Documentation of Tests and Inspections

Records of inspections and tests required by 40 CFR part 112 signed by the appropriate supervisor or inspector must be kept with the SPCC Plan for a period of three years. Records of inspections and tests conducted under usual and customary business practices will suffice. Documentation of the following inspections and tests should be kept with the SPCC Plan.

Inspection or Test	Documentation		Not Applicable
	Present	Not Present	
112.7—General SPCC Requirements			
<i>[2002 Rule Requirement]</i>			✓
(d) Integrity testing is conducted for bulk storage containers with no secondary containment system and for which an impracticability determination has been made			✓
(d) Integrity and leak testing of valves and piping associated with bulk storage containers with no secondary containment system and for which an impracticability determination has been made			✓
(l) Evaluate field-constructed aboveground containers for potential for brittle fracture or other catastrophic failure when the container undergoes a repair, alteration, reconstruction or change in service			✓
112.8/112.12—Onshore facilities (excluding production)			
(b)(2) Storm water released from facility drainage directly to a watercourse is inspected and records of drainage are kept	✓		
(c)(3)(iv) Rainwater released directly from diked containment areas to a storm drain or open watercourse is inspected and records of drainage are kept	✓		
(c)(4) Regular leak testing of completely buried metallic storage tanks	✓		
(c)(6) Aboveground containers tested for integrity on a regular schedule	✓		
(c)(6) Aboveground containers, supports and foundations visually inspected on a regular schedule.	✓		
(c)(6) Diked areas inspected for accumulations of oil.	✓		
(c)(8)(v) Liquid level sensing devices regularly tested to ensure proper operation	✓		
(c)(9) Effluent treatment facilities are observed frequently enough to detect possible system upsets that could cause a discharge as described in §112.1(b)	✓		
(d)(1) When buried piping is exposed, it is carefully inspected for deterioration and corrosion			✓
(d)(4) Aboveground valves, piping and appurtenances are regularly inspected and the general condition of flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces are assessed	✓		
<i>[2002 Rule Requirement]</i>			✓
(d)(4) Integrity and leak testing of buried piping is conducted at time of installation, modification, construction, relocation or replacement			✓
112.6—Qualified Facilities (Complete this section only if the facility is a "qualified facility" as defined in §112.3(g))			
(c)(4)(i) Comply with the requirements under §112.8(c)(6) or §112.12(c)(6) as applicable (see above);			
OR			
(c)(4)(ii) Aboveground containers inspected and/or tested for integrity on a regular schedule and whenever repairs are made			
Appropriate qualifications for personnel performing tests and inspections have been determined in accordance with industry standards			
The frequency and type of testing and inspections have been determined in accordance with industry standards, taking into account container size, configuration and design			

PRODUCT STORAGE TANK LIST

TANK NO.	PRODUCT IDENTIFICATION	CONST.	NOMINAL CAPACITY (GAL.)	ACTUAL CAPACITY (GAL.)
41	ETHANOL	A/G	90,700	80,500
42	ETHANOL	A/G	90,700	80,500
43	GASOLINE (REGULAR)	A/G	90,700	80,500
44	GASOLINE (REGULAR)	A/G	90,700	80,700
45	ETHANOL	A/G	90,700	80,700
46	ETHANOL	A/G	88,875	78,373
47	GASOLINE (REGULAR)	A/G	425,000	373,755
48	GASOLINE (REGULAR)	A/G	425,000	373,609
49	GASOLINE (SUPER)	A/G	450,000	419,926
50	GASOLINE (SUPER)	A/G	450,000	422,926
51	ADDITIVE (SHELL)	A/G	5,000	4,500
52	ADDITIVE (EXXON)	U/G	5,000	3,600
53	WATER/GASOLINE	A/G	6,000	5,400
54	ADDITIVE (MOBIL)	A/G	5,000	4,500
55	DIESEL	A/G	10,000	9,300
7	OUT OF SERVICE	A/G	12,000	10,200
8	OUT OF SERVICE	A/G	12,000	10,200
9	ADDITIVE (GENERIC)	A/G	12,000	10,200
10	ADDITIVE (SHELL)	A/G	12,000	10,200
16	OIL/WATER SEP.	U/G	6,000	5,400

all
Concrete
containers
all have
overfill
protection

A/G : ABOVE GROUND
A/U : UNDER GROUND

Appendix B: Documentation of Field Observations for Containers and Associated Requirements

Containers and Piping

Check piping for: droplets of stored material, discoloration, corrosion, bowing of pipe between supports, evidence of stored material seepage from valves or seals, and localized dead vegetation. (Document in comments section of §112.8(d) / §112.12(d).)

Check active measures (countermeasures) for: amount indicated in plan is available and appropriate; deployment procedures are realistic; material is located so that they are readily available; efficacy of discharge detection; availability of personnel and training, appropriateness of measures to prevent a discharge as described in §112.1(b).

[illegible]

Not applicable

SPCC CONTINGENCY PLAN REVIEW CHECKLIST

Appendix D: 40 CFR Part 109—Criteria for State, Local and Regional Oil Removal Contingency Plans

If a facility makes an impracticability determination for secondary containment in accordance with §112.7(d), it is required to provide an oil spill contingency plan following 40 CFR part 109. An oil spill contingency plan may also be developed as an alternative to general secondary containment for qualified oil filled operational equipment in accordance with §112.7(k).

109.5—Development and implementation criteria for State, local and regional oil removal contingency plans*	Yes	No
(a) Definition of the authorities, responsibilities and duties of all persons, organizations or agencies which are to be involved in planning or directing oil removal operations.		
(b) Establishment of notification procedures for the purpose of early detection and timely notification of an oil discharge including:		
(1) The identification of critical water use areas to facilitate the reporting of and response to oil discharges.		
(2) A current list of names, telephone numbers and addresses of the responsible persons (with alternates) and organizations to be notified when an oil discharge is discovered.		
(3) Provisions for access to a reliable communications system for timely notification of an oil discharge, and the capability of interconnection with the communications systems established under related oil removal contingency plans, particularly State and National plans (e.g., NCP).		
(4) An established, prearranged procedure for requesting assistance during a major disaster or when the situation exceeds the response capability of the State, local or regional authority.		
(c) Provisions to assure that full resource capability is known and can be committed during an oil discharge situation including:		
(1) The identification and inventory of applicable equipment, materials and supplies which are available locally and regionally.		
(2) An estimate of the equipment, materials and supplies that would be required to remove the maximum oil discharge to be anticipated.		
(3) Development of agreements and arrangements in advance of an oil discharge for the acquisition of equipment, materials and supplies to be used in responding to such a discharge.		
(d) Provisions for well defined and specific actions to be taken after discovery and notification of an oil discharge including:		
(1) Specification of an oil discharge response operating team consisting of trained, prepared and available operating personnel.		
(2) Predesignation of a properly qualified oil discharge response coordinator who is charged with the responsibility and delegated commensurate authority for directing and coordinating response operations and who knows how to request assistance from Federal authorities operating under existing national and regional contingency plans.		
(3) A preplanned location for an oil discharge response operations center and a reliable communications system for directing the coordinated overall response operations.		
(4) Provisions for varying degrees of response effort depending on the severity of the oil discharge.		
(5) Specification of the order of priority in which the various water uses are to be protected where more than one water use may be adversely affected as a result of an oil discharge and where response operations may not be adequate to protect all uses.		
(e) Specific and well defined procedures to facilitate recovery of damages and enforcement measures as provided for by State and local statutes and ordinances.		

* The contingency plan should be consistent with all applicable state and local plans, Area Contingency Plans, and the National Contingency Plan (NCP).

**8.3HAZARDOUS WASTE CONTINGENCY PLAN
(40 CFR 265 SUBPART D)**

8.3.1Distribution Letter to Local Agencies

September 30, 2001

To: Distribution List

Re: 40 CFR 265 Subpart D Hazardous Waste Contingency Plan

This document is being provided to meet the requirements of 40 CFR 265 Subpart D requiring hazardous waste facilities to provide a contingency plan for responding to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

This regulation allows for the amendment of an existing emergency or contingency plan to address the release of a hazardous waste. The document being provided to you is the Hazardous Waste Contingency Plan (HWCP) for the Motiva Enterprises LLC Brooklyn Terminal. This plan represents the pertinent information that would be necessary to respond to an incident at the terminal, or similarly, treat victims of any incident at the terminal. For the Brooklyn Terminal, hazardous materials generated from the facility will be petroleum-based products. Material Safety Data Sheets (MSDS) for products that are stored and handled at the terminal have also been included to aid in the response effort.

The intent of this regulation is to ensure that local responders have an understanding of the facilities with which they are dealing in the event of an emergency. The Oil Spill Response Plan was prepared under the guidelines of the Oil Pollution Act of 1990 (OPA-90) and provides large quantities of information regarding terminal operations. This HWCP represents the initial actions and information that would be needed for a response from any of the local responders or emergency services. By additionally providing MSDS sheets for products handled at the terminal we believe we are meeting the intent of the regulation.

Please maintain this document as a record of the actions that will be taken to minimize hazards to human health or the environment from fires, explosions or any unplanned release of hazardous waste.

Nassau County Emergency Management
Attn: Inspector Tom Skelly
140 15th Street
Mineola, NY 11501

Nassau County Medical Center
Emergency Coordinator
2201 Hempstead Turnpike
East Meadow, NY 11554

Lawrence Fire Department
75 Washington Avenue
Lawrence, NY 11559

Nassau County Police Dept.
1699 Broadway
Hewlett, NY 11557

Nassau County Fire Marshall's Office
899 Jerusalem Avenue
Uniondale, NY 11553

Malverne Fire Dept.
1 Britton Circle
Malverne, NY 11565

At this time, it is our intentions that this document will be updated when significant changes in chemical storage result in a change in emergency strategy. Please retain this letter as an introduction to this document. If additional information is needed, please contact the Terminal Manager at 516-371-4780.

Sincerely,

George O'Connor
Health and Safety Representative

Attachments

c: Nassau County Emergency Management
Lawrence Fire Department
Malverne Fire Dept.
Nassau County Medical Center
Nassau County Police Department
Nassau County Fire Marshall's Office

8.3.2Regulatory Cross-Reference

(Hazardous Waste Contingency Plan Cross Reference 40 CFR 265 Subpart D)

HWCP 40 CFR 265 Subpart D	Located in ICP
265.52(a). Implementation Actions.	Core Plan 1.1.7
265.52(c). Arrangements with local agencies.	Core Plan 1.1.6.4
265.52(d). Names, addresses, numbers of Emergency Response Coordinators (Qualified Individuals)	Core Plan 1.1.2
265.52(e). Listing of emergency equipment: <ul style="list-style-type: none">• Fire extinguishing systems• Spill control equipment, communications• Alarms• Decontamination equipment	Core Plan 1.1.4.5 1.1.4.4 1.1.4.4, 1.1.6.1 1.1.7.16
265.52(f). Evacuation Plan.	Core Plan 1.1.6
265.16 (d)(2) Job Descriptions	Annex 3.a.5

8.4HAZARDOUS WASTE OPERATIONS EMERGENCY RESPONSE PLAN (29 CFR 1920.120)

8.4.1Regulatory Cross-Reference

CROSS REFERENCE FOR HAZARDOUS WASTE OPERATIONS EMERGENCY RESPONSE PLAN AND THE FACILITY RESPONSE PLAN (OPA '90)

Motiva Enterprises LLC HAZWOPER Plan (29 CFR 1920.120(q)(2)(I-xIII))	Location in Core Plan (ERAP) & Integrated Contingency Plan
1.0 Pre-Emergency Planning and Coordination with Outside Parties (q)(2)(i)	
1.1 Hazardous Substances Stored At facility*	Core Plan 1.1; Annex 7, Table 7.1
1.2 Foreseeable types of incidents*	Core Plan 1.1.7.1; Annex 1, Figure 1.2
1.3 Plot Plan*	Core Plan 1.1.8; Annex 1, Figure 1.2
1.4 Pre-emergency planning and coordination*	Core Plan 1.1.6.1-1.1.6.4
2.0 Personnel Roles and Training (q)(2)(ii)	Core Plan 1.0 - Introductory Note; Annex 3.a.5; Annex 5; Annex 11.2
3.0 Communications and Notifications (q)(2)(ii)	Core Plan 1.1.1, 1.1.2 - Notification Lists; Core Plan 1.1.4.3; Annex 9.1.2, 9.2
4.0 Emergency Recognition and Prevention (q)(2)(iii)	Core Plan 1.1; 1.1.7.1; Annex 9
5.0 Safe Distances and Places of Refuge (q)(2)(iv)	Core Plan 1.1.6.1; Annex 9.6.7
6.0 Evacuation Routes and Procedures (q)(2)(vi)	Core Plan 1.1.6.1, 1.1.6.2, 1.1.8, Figure 1.3; Annex 1, Figure 1.3
7.0 Site Security and Control (q)(2)(v)	Core Plan 1.1.6.3; Annex 9
8.0 Decontamination (q)(2)(vii)	Core Plan 1.1.7.16
9.0 Emergency Medical Treatment and First Aid (q)(2)(viii)	Core Plan 1.1.7.16
10.0 Emergency Response Notifications (q)(2)(ix)	Core Plan 1.1.1 - 1.1.3, 1.1.4.4, 1.1.6.1, 1.1.7.1; Annex 9.2
11.0 Emergency Response Procedure (q)(2)(ix)	1.1.7 - Immediate Actions; Annex 9
12.0 Personal Protective Equipment (q)(2)(xi)	Core Plan 1.0 - Introductory Note, 1.1.4.1
13.0 Review Process (q)(2)(x)	Core Plan 1.1.7.3

8.5 U.S. Coast Guard Cross-Reference

33 CFR §154.1030	LOCATION
(a) The plan must be written in English.	Entire Plan
(b) A response plan must be divided into the sections listed in this paragraph and formatted in the order specified herein unless noted otherwise. It must also have some easily found marker identifying each section listed below. The following are the sections and subsections of a facility response plan:	TOC, Tabs and Annex 8.5
(1) Introduction and plan contents.	Section I, 1.1
(2) Emergency response action plan:	Section II Core Plan, 1.1
(i) Notification procedures.	Section II Core Plan, 1.1.2 and 1.1.3
(ii) Facility's spill mitigation procedures.	Section II Core Plan, 1.1.7
(iii) Facility's response activities.	Section II Core Plan, 1.1.7.4
(iv) Fish and wildlife and sensitive environments.	Section III Annex 3
(v) Disposal plan.	Section III Annex 3.d.6
(3) Training and Exercises:	Section III Annex 5
(i) Training procedures.	Section III Annex 5.2
(ii) Exercise procedures.	Section III Annex 5.1
(4) Plan review and update procedures.	Section III Annex 6
(5) Appendices.	
(i) Facility-specific information.	Section I, 1.2
(ii) List of contacts.	Section II Core Plan, 1.1.2
(iii) Equipment lists and records.	Section II Core Plan, 1.1.4
(iv) Communications plan.	
(v) Site-specific safety and health plan.	Section II Core Plan, 2.1.1.1 and Section III Annex 3.b.3
(vi) List of acronyms and definitions.	Section III Annex 12
(vii) A geographic-specific appendix for each zone in which a mobile facility operates.	N/A
(c) The required contents for each section and subsection of the plan are contained in §§ 154.1035, 154.1040, and 154.1041, as appropriate.	Section III Annex 8.5
(d) The sections and subsections of response plans submitted to the COTP must contain at a minimum all the information required in §§154.1035, 154.1040, and 154.1041, as appropriate. It may contain other appropriate sections, subsections, or information that are required by other Federal, State, and local agencies.	Section III Annex 8.5 and Annex 10
(e) For initial and subsequent submission, a plan that does not follow the format specified in paragraph (b) of this section must be supplemented with a detailed cross-reference section to identify the location of the applicable sections required by this subpart.	Section III Annex 8.5
(f) The information contained in a response plan must be consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR part 300) and the Area Contingency Plan(s) (ACP) covering the area in which the facility operates. Facility owners or operators shall ensure that their response plans are in accordance with the ACP in effect 6 months prior to initial plan submission or the annual plan review required under § 154.1065(a). Facility owners or operators are not required to, but may at their option, conform to an ACP which is less than 6 months old at the time of plan submission.	Section I, 1.1

8.5USCG Cross Reference for OPA 90 Plan (33 CFR §154.1030 and 33 CFR §154.1035) Final Rules (Cont'd)

CFR §154.1035	LOCATION
(a) <i>Introduction and plan content.</i> This section of the plan must include facility and plan information as follows:	-----
(1) The facility's name, street address, city, county, state, ZIP code, facility telephone number, and telefacsimile number, if so equipped. Include mailing address if different from street address.	Section I, 1.2.1
(2) The facility's location described in a manner that could aid both a reviewer and a responder in locating the specific facility covered by the plan, such as, river mile or location from a known landmark that would appear on a map or chart.	Section I, 1.2.1, 1.2.2
(3) The name, address, and procedures for contacting the facility's owner or operator on a 24-hour basis.	Section I, 1.2.4 Section II, 1.1.2
(4) A table of contents.	TOC
(5) During the period that the submitted plan does not have to conform to the format contained in this subpart, a cross index, if appropriate.	Section III Annex 8.5
(6) A record of change(s) to record information on plan updates.	Section III Annex 6.2
(b) <i>Emergency Response Action Plan.</i> This section of the plan must be organized in the subsections described in this paragraph:	-----
(1) <i>Notification procedures.</i> (i) This subsection must contain a prioritized list identifying the person(s), including name, telephone number, and their role in the plan, to be notified of a discharge or substantial threat of a discharge of oil. The telephone number need not be provided if it is listed separately in the list of contacts required in the plan. This Notification Procedures listing must include --	Section II Core Plan, 1.1.2 and 1.1.3; Section III Annex 2.1
(A) Facility response personnel, the spill management team, oil spill removal organizations, and the qualified individual(s) and the designated alternate(s); and	Section III Core Plan, 1.1.2
(B) Federal, State, or local agencies, as required.	Section II Core Plan, 1.1.2
(ii) This subsection must include a form, ..., which contains information to be provided in the initial and follow-up notifications to Federal, State, and local agencies.	Section II Core Plan, 1.1.3
(2) <i>Facility's spill mitigation procedures.</i> (i) This subsection must describe the volume(s) and oil groups that would be involved in the --	-----
(A) Average most probable discharge from the MTR facility;	Section II Core Plan, 1.1.7.4
(B) Maximum most probable discharge from the MTR facility;	Section II Core Plan, 1.1.7.4
(C) Worst case discharge from the MTR facility; and	Section II Core Plan, 1.1.7.4
(D) Where applicable, the worst case discharge from the non-transportation-related facility. This must be the same volume provided in the response plan for the non-transportation-related facility.	Section II Core Plan, 1.1.7.4
(ii) This subsection must contain prioritized procedures for facility personnel to mitigate or prevent any discharge or substantial threat of a discharge of oil resulting from operational activities associated with internal or external facility transfers including specific procedures to shut down affected operations. Facility personnel responsible for performing specified procedures to mitigate or prevent any discharge or potential discharge shall be identified by job title. A copy of these procedures shall be maintained at the facility operations center. These procedures must address actions to be taken by facility personnel in the event of a discharge, potential discharge, or emergency involving the following equipment and scenarios:	-----

8.5USCG Cross Reference for OPA 90 Plan (33 CFR §154.1030 and 33 CFR §154.1035) Final Rules (Cont'd)

CFR §154.1035 (Cont'd)	LOCATION
(A) Failure of manifold, mechanical loading arm, other transfer equipment, or hoses, as appropriate;	Section II Core Plan, 1.1.7.5
(B) Tank overfill;	Section II Core Plan, 1.1.7.6
(C) Tank failure;	Section II Core Plan, 1.1.7.7
(D) Piping rupture;	Section II Core Plan, 1.1.7.8
(E) Piping leak, both under pressure and not under pressure, if applicable;	Section II Core Plan, 1.1.7.9
(F) Explosion or fire; and	Section II Core Plan, 1.1.7.10
(G) Equipment failure (e.g. pumping system failure, relief valve failure, or other general equipment relevant to operational activities associated with internal or external facility transfers.)	Section II Core Plan, 1.1.7.5 thru 1.1.7.10
(iii) This subsection must contain a listing of equipment and the responsibilities of facility personnel to mitigate an average most probable discharge.	Section II Core Plan, 1.1.7
(3) <i>Facility's response activities.</i> (i) This subsection must contain a description of the facility personnel's responsibilities to initiate a response and supervise response resources pending the arrival of the qualified individual.	Section II Core Plan, 1.1.7; Section III Annex 3.a.1 and Annex 3.b.1
(ii) This subsection must contain a description of the responsibilities and authority of the qualified individual and alternate as required in § 154.1026.	Section III Annex 3.b.1
(iii) This subsection must describe the organizational structure that will be used to manage the response actions. This structure must include the following functional areas.	Section III Annex 3.a.6
(A) Command and control;	Section III Annex 3.b.1
(B) Public information;	Section III Annex 3.b.2
(C) Safety;	Section III Annex 3.b.3
(D) Liaison with government agencies;	Section III Annex 3.b.4
(E) Spill Operations;	Section III Annex 3c
(F) Planning;	Section III Annex 3d
(G) Logistics support; and	Section III Annex 3e
(H) Finance.	Section III Annex 3f
(iv) This subsection must identify the oil spill removal organizations and the spill management team to:	-----
(A) Be capable of providing the following response resources:	-----
(1) Equipment and supplies to meet the requirements of §§ 154.1045, 154.1047 or subparts H or I of this part, as appropriate; and	Section II Core Plan, 1.1.2, 1.1.4.1, 1.1.4.3 and 1.1.7
(2) Trained personnel necessary to continue operation of the equipment and staff of the oil spill removal organization and spill management team for the first 7 days of the response.	Section II Core Plan 1.1.7; Section III Annex 11.1
(B) This section must include job descriptions for each spill management team member within the organizational structure described in paragraph (b)(3)(iii) of this section. These job descriptions should include the responsibilities and duties of each spill management team member in a response action.	Section III Annex 3a thru 3f
(v) For mobile facilities that operate in more than one COTP zone, the plan must identify the oil spill removal organization and the spill management team in the applicable geographic-specific appendix. The oil spill removal organization(s) and the spill management team discussed in paragraph (b)(3)(iv)(A) of this section must be included for each COTP zone in which the facility will handle, store, or transport oil in bulk.	N/A

8.5USCG Cross Reference for OPA 90 Plan (33 CFR §154.1030 and 33 CFR §154.1035) Final Rules (Cont'd)

CFR §154.1035 (Cont'd)	LOCATION
(4) <i>Fish and wildlife and sensitive environments.</i> (i) This section of the plan must identify areas of economic importance and environmental sensitivity, as identified in the ACP, which are potentially impacted by a worst case discharge. ACPs are required under section 311(j)(4) of the FWPCA to identify fish and wildlife and sensitive environments. The applicable ACP shall be used to designate fish and wildlife and sensitive environments in the plan. Changes to the ACP regarding fish and wildlife and sensitive environments shall be included in the annual update of the response plan, when available.	Section III Annex 1, Fig 1.5; Annex 3.d.1 and 3.d.3
(ii) For a worst case discharge from the facility, this section of the plan must --	-----
(A) List all fish and wildlife and sensitive environments identified in the ACP which are potentially impacted by a discharge of persistent oils, non-persistent oils, or non-petroleum oils.	Section III Annex 1, Fig 1.5; Annex 3.d.1
(B) Describe all the response actions that the facility anticipates taking to protect these fish and wildlife and sensitive environments.	Section III Annex 3.d.3
(C) Contain a map or chart showing the location of those fish and wildlife and sensitive environments which are potentially impacted. The map or chart shall also depict each response action that the facility anticipates taking to protect these areas. A legend of activities must be included on the map page.	Section III Annex 1, Fig 1.5
(iii) For a worst case discharge, this section must identify appropriate equipment and required personnel, available by contract or other approved means as described in § 154.1028, to protect fish and wildlife and sensitive environments which fall within the distances calculated using the methods outlined in this paragraph as follows:	-----
(A) Identify the appropriate equipment and required personnel to protect all fish and wildlife and sensitive environments in the ACP for the distances, as calculated in paragraph (b)(4)(iii)(B) of this section, that the persistent oils, non-persistent oils, or non-petroleum oils are likely to travel in the noted geographic area(s) and number of days listed in Table 2 of appendix C of this part;	Section III Annex 3.d.3.3
(B) Calculate the distances required by paragraph (b)(4)(iii)(A) of this section by selecting one of the methods described in this paragraph:	-----
(1) Distances may be calculated as follows:	-----
(i) For persistent oils and non-petroleum oils discharged into non-tidal waters, the distance from the facility reached in 48 hours at maximum current.	N/A
(ii) For persistent and non-petroleum oils discharged into tidal waters, 15 miles from the facility down current during ebb tide and to the point of maximum tidal influence or 15 miles, whichever is less, during flood tide.	N/A
(iii) For non-persistent oils discharged into non-tidal waters, the distance from the facility reached in 24 hours at maximum current.	N/A
(iv) For non-persistent oils discharged into tidal waters, 5 miles from the facility down current during ebb tide and to the point of maximum tidal influence or 5 miles, whichever is less, during flood tide.	Section III Annex 3.d.1

8.5USCG Cross Reference for OPA 90 Plan (33 CFR §154.1030 and 33 CFR §154.1035) Final Rules (Cont'd)

CFR §154.1035 (Cont'd)	LOCATION
(2) A spill trajectory or model may be substituted for the distances calculated under paragraph (b)(4)(iii)(B)(i) of this section. The spill trajectory or model must be acceptable to the COTP.	N/A
(3) The procedures contained in the Environmental Protection's Agency's regulations on oil pollution prevention for non-transportation-related onshore facilities at 40 CFR part 112, appendix C, Attachment C-III may be substituted for the distances listed in non-tidal and tidal waters; and	N/A
(C) Based on historical information or a spill trajectory or model, the COTP may require the additional fish and wildlife and sensitive environments also be protected.	-----
(5) <i>Disposal Plan</i> . This subsection must describe any actions to be taken or procedures to be used to ensure that all recovered oil and oil contaminated debris produced as a result of any discharge are disposed according to Federal, state, or local requirements.	Section III Annex 3.d.6
(c) <i>Training and exercises</i> . This section must be divided into the following two subsections:	-----
(1) <i>Training procedures</i> . This subsection must describe the training procedures and programs of the facility owner or operator to meet the requirements in § 154.1050.	Section III Annex 5.2
(2) <i>Exercise procedures</i> . This subsection must describe the exercise program to be carried out by the facility owner or operator to meet the requirements in § 154.1055.	Section III Annex 5.1
(d) <i>Plan review and update procedures</i> . This section must address the procedures to be followed by the facility owner or operator to meet the requirements of § 154.1065 and the procedures to be followed for any post-discharge review of the plan to evaluate and validate its effectiveness.	Section III Annex 6
(e) <i>Appendices</i> . This section of the response plan must include the appendices described in this paragraph.	-----
(1) <i>Facility-specific information</i> . This appendix must contain a description of the facility's principal characteristics.	-----
(i) There must be a physical description of the facility including a plan of the facility showing the mooring areas, transfer locations, control stations, locations of safety equipment, and the location and capacities of all piping and storage tanks.	Section III Annex 1, Fig 1.2
(ii) The appendix must identify the sizes, types, and number of vessels that the facility can transfer oil to or from simultaneously.	Section I, 1.2.7
(iii) The appendix must identify the first valve(s) on facility piping separating the transportation-related portion of the facility from the non-transportation-related portion of the facility, if any. For piping leading to a manifold located on a dock serving tank vessels, this valve is the first valve inside the secondary containment required by 40 CFR part 112.	Section III Annex 1, Fig 1.2
(iv) The appendix must contain information on the oil(s) and hazardous material handled, stored, or transported at the facility in bulk. A material safety data sheet meeting the requirements of 29 CFR 1910.1200, 33 CFR 154.310(a)(5) or an equivalent will meet this requirement. This information can be maintained separately providing it is readily available and the appendix identifies its location. This information must include --	Section III Annex 11.3

8.5USCG Cross Reference for OPA 90 Plan (33 CFR §154.1030 and 33 CFR §154.1035) Final Rules (Cont'd)

CFR §154.1035 (Cont'd)	LOCATION
(A) The generic or chemical name;	Section III Annex 11.3
(B) A description of the appearance and odor;	Section III Annex 11.3
(C) The physical and chemical characteristics;	Section III Annex 11.3
(D) The hazards involved in handling the oil(s) and hazardous materials. This shall include hazards likely to be encountered if the oil(s) and hazardous materials come in contact as a result of a discharge; and	Section III Annex 11.3
(E) A list of firefighting procedures and extinguishing agents effective with fires involving the oil(s) and hazardous materials.	Section III Annex 11.3
(v) The appendix may contain any other information which the facility owner or operator determines to be pertinent to an oil spill response.	Section III Annex 11
(2) <i>List of contacts.</i> This appendix must include information on 24-hour contact of key individuals and organizations. If more appropriate, this information may be specified in a geographic-specific appendix. The list must include --	----
(i) The primary and alternate qualified individual(s) for the facility;	Section II Core Plan, 1.1.2
(ii) The contact(s) identified under paragraph (b)(3)(iv) of this section for activation of the response resources; and	Section II Core Plan, 1.1.2
(iii) Appropriate Federal, State, and local officials.	Section II Core Plan, 1.1.2
(3) <i>Equipment list and records.</i> This appendix must include the information specified in this paragraph.	----
(i) The appendix must contain a list of equipment and facility personnel required to respond to an average most probable discharge, as defined in § 154.1020. The appendix must also list the location of the equipment.	Section II Core Plan, 1.1.4 and 1.1.7
(ii) The appendix must contain a detailed listing of all the major equipment identified in the plan as belonging to an oil spill removal organization(s) that is available, by contract or other approved means as described in § 154.1028(a), to respond to a maximum most probable or worst case discharge, as defined in § 154.1020. The detailed listing of all major equipment may be located in a separate document referenced by the plan. Either the appendix or the separate document referenced in the plan must provide the location of the major response equipment.	N/A
(iii) It is not necessary to list response equipment from oil spill removal organization(s) when the organization has been classified by the Coast Guard and their capacity has been determined to equal or exceed the response capability needed by the facility. For oil spill removal organization(s) classified by the Coast Guard, the classification must be noted in this section of the plan. When it is necessary for the appendix to contain a listing of response equipment, it shall include all of the following items that are identified in the response plan: Skimmers; booms; dispersant application, in-situ burning, bioremediation equipment and supplies, and other equipment used to apply other chemical agents on the NCP Product Schedule (if applicable); communications, firefighting, and beach cleaning equipment; boats and motors; disposal and storage equipment; and heavy equipment. The list must include for each piece of equipment --	Section II Core Plan, 1.1.2; Section II Annex 11.1

8.5USCG Cross Reference for OPA 90 Plan (33 CFR §154.1030 and 33 CFR §154.1035) Final Rules (Cont'd)

CFR §154.1035 (Cont'd)	LOCATION
(A) The type, make, model, and year of manufacture listed on the nameplate of the equipment;	N/A
(B) For oil recovery devices, the effective daily recovery rate, as determined using section 6 of Appendix C of this part;	N/A
(C) For containment boom, the overall boom height (draft and freeboard) and type of end connectors;	N/A
(D) The spill scenario in which the equipment will be used for or which it is contracted;	N/A
(E) The total daily capacity for storage and disposal of recovered oil;	N/A
(F) For communication equipment, the type and amount of equipment intended for use during response activities. Where applicable, the primary and secondary radio frequencies must be specified.	N/A
(G) Location of the equipment; and	N/A
(H) The date of the last inspection by the oil spill removal organization(s).	N/A
(4) <i>Communications plan.</i> This appendix must describe the primary and alternate method of communication during discharges, including communications at the facility and at remote locations within the areas covered by the response plan. The appendix may refer to additional communications packages provided by the oil spill removal organization. This may reference another existing plan or document.	-----
(5) <i>Site-specific safety and health plan.</i> This appendix must describe the safety and health plan to be implemented for any response location(s). It must provide as much detailed information as is practicable in advance of an actual discharge. This appendix may reference another existing plan requiring under 29 CFR 1910.120.	Section III Annex 2.1.1.1
(6) <i>List of acronyms and definitions.</i> This appendix must list all acronyms used in the response plan including any terms or acronyms used by Federal, State, or local governments and any operational terms commonly used at the facility. This appendix must include all definitions that are critical to understanding the response plan.	Section III Annex 12

8.5USCG Cross Reference for OPA 90 Plan (33 CFR §154.1030 and 33 CFR §154.1035, §154.1050, §154.1055) (Cont'd)

§ 154.1050	DESCRIPTION OF GUIDELINE ITEM	SECTION
(a)	...must identify the training to be provided to each individual with responsibilities under the plan.	Annex 5
(b)	A facility owner or operator shall ensure the maintenance of records sufficient to document training of facility personnel....	Annex 5.2
(c)	Where applicable, a facility owner or operator shall ensure that an oil spill removal organization identified in a response plan to meet the requirements of this subpart maintain records sufficient to document training....	Annex 5.1.1
(d)	The facility owner or operator remains responsible for ensuring that all private response personnel are trained to meet the Occupational Safety and Health Administration (OSHA) standards for emergency response operations in 29 CFR 1910.120.	Introduction 1.1
§ 154.1055	DESCRIPTION OF GUIDELINE ITEM	SECTION
(a)(1)	Qualified individual notification exercises...	Annex 5
(a)(2)	Spill management team tabletop exercises...	Annex 5
(a)(3)(i)	Equipment deployment exercises...facility owned and operated.	Annex 5
(a)(3)(ii)	Equipment deployment exercises...oil spill removal organization equipment.	Annex 5
(a)(4)	Emergency procedures exercises (optional)	---

ANNEX 9..... COMPANY EMERGENCY PLAN AND REPORTING PROCEDURES

9.1..... CORPORATE EMERGENCY REPORTING

9.1.1..... Guidelines

Houston Office personnel and appropriate affiliates are to be promptly notified and be kept informed of unusual events and reportable incidents occurring at our marketing facilities or involving Motiva owned product or property handled or operated by others. This procedure must be carefully followed to ensure that Headquarters personnel receive the required information. Information on how to effectively communicate with the news media during an emergency situation is provided in Annex 3.b.2.

9.1.2..... Reporting Incidents Internally

To report incidents internally, take the following actions:

1. If the situation warrants potential use of resources from Emergency Management, Preparedness, and Response (EMP&R), call their 24 hr. hotline immediately at (877) 242-7400 to report incidents. When notification is made to or assistance is requested from Emergency Management, Preparedness, and Response (EMP&R), notification information should be documented on the EMP&R Notification Log.

Collect the information requested on the Spill Response Notification Form (located in the Core Plan) prior to calling the Emergency Management, Preparedness, and Response Team.

2. Contact the Regional Manager and the Manager, LSDR/HSE and Emergency Management within 24 hours (7 days a week).
3. If the reportable event involves a spill or an impact to the community, a written event investigation report (Investigation Report*) will be provided, within 10 calendar days, to the Regional Manager and the Manager, LSDR/HSE and Emergency Management.

***NOTE:** Exceptions to the Investigation Report will be made for sensitive matters which may need to be investigated under the attorney-client work product privilege. Contact Legal immediately where circumstances warrant. Advise the above contacts accordingly. On rare occasions an incident (e.g., certain process safety incidents) may require additional time to complete the investigation. The Manager, LSDR/HSE and Emergency Management is authorized to extend the reporting requirements where appropriate.

The event Investigation Report should address the facts of the matter and specifically discuss what preventative steps will be taken to help prevent a similar occurrence. The report should provide sufficient detail to enable others to learn from the experience.

Other reportable environmental events will not require a written follow-up report unless specifically requested.

4. For environmental incidents that are reportable to the National Response Center (NRC) pursuant to various federal laws, notify NRC at 1-800-424-8802 upon discovery of the environmental incident. If required by law, you must also contact local and State agencies in a timely manner to report certain environmental incidents.
5. Fatalities or incidents resulting in the hospitalization of three (3) or more Motiva employees must be initially reported orally by telephone or in person to the nearest OSHA area office within eight hours. Facilities can either call the nearest OSHA area office or call the OSHA 24-hour toll free telephone number at 1-800-321-OSHA (6742). The report must relate the circumstances of the accident, the number of fatalities and hospitalizations, and the extent of any injuries. The OSHA area director may require additional reports, in writing or otherwise, concerning the accident. Although the regulation does not require the employer to confirm in writing the oral or in person report to OSHA, Motiva facilities should work with the Motiva Legal Department to prepare a confirmation letter to send to OSHA.

9.1.3..... Incident Investigation

Investigation of incidents qualifying for emergency reporting should be coordinated with the Law Department. Do not delay required regulatory or insurance company reporting.

Subject to the requirement to coordinate incident investigations with the Law Department for environmental incidents, injury accidents, and property damage / product loss, a full Incident Report detailing the known factors, confirmed causes, costs, and actions taken to address the incident must be submitted to the Houston Office within ten (10) working days of the start date of an incident investigation that does not require any testing, sampling, or other activities that require more than 10 working days to complete. For incident investigations that require testing, sampling, or other activities that cannot reasonably be completed in ten (10) working days, the incident report must be submitted within thirty (30) working days of the start of date of the incident.

9.1.3.1Environmental

Environmental incidents should be reported if any one of the following conditions is present:

1. Any spill, discharge, or migration that threatens significant ecological damage or poses a threat to employee or public welfare.
2. Any incident that may have serious legal repercussions, such as the threat of legal action against the Company or an employee, the imposition of a significant penalty, or cleanup operations being taken over by a governing agency.
3. Any significant or potential side effects such as hazardous materials, petroleum products, or chemicals reaching a drinking water source, entering a public sewer system, or entering into basements of buildings or homes.
4. Any significant public reaction or news media coverage which has or may reflect on the Company's reputation.

9.1.3.2Accidents, Property Damage, Security, and Unfavorable Publicity

The following incidents should be reported:

Injury accidents (employees, contractors, or third parties) requiring hospitalization or a fatality.

Property damage, product loss, or other unusual happening (fires, explosions, power failures) where the losses or costs are expected to exceed \$50,000.

Any act of criminal violence resulting in serious injury or fatality, bomb threats, death threats, group demonstrations, wildcat strikes, or unexpected picketing, whether actual, threatened or potential, that could impact on Company operations, facilities, or personnel.

Any incident or event likely to result in significant unfavorable public reaction or news media coverage that is not covered within other categories.

9.1.4Handling the News Media

Motiva seeks to be a cooperative, forthright, and a responsible corporate citizen. In keeping with this, it is our goal to keep the public informed in the event of an emergency involving the safety of individuals or property.

9.2EMP&R NOTIFICATION LOG

Person on the EMP&R staff to whom you relayed this emergency information:

Name: _____

Phone: (____) _____

Time: ____:____ AM or PM (circle one) Time Zone: EST or CST

Document any calls or actions that you take in regard to this Emergency Call
(including calls where you leave a message):

Follow-up call:	Time Called:

Follow-up call:	Time Called:

Follow-up call:	Time Called:

Follow-up call:	Time Called:

9.3LOCAL EMERGENCY PLAN

9.3.1General Emergencies and Disasters

9.3.1.1Introduction

The objective of this Plan is to prepare for a general emergency and in so doing provide for the safety of Company personnel, protect Company property, and maintain the ability to continue operations.

9.3.1.2Authority to Activate Plan

This Plan may be activated by the designated Qualified Individual or the designated Alternate Qualified Individual. The individual activating the Plan shall assume responsibility for its complete execution until such time as relieved by higher authority.

9.3.1.3. ...Emergency Agencies and Control Center

When deemed necessary, persons listed on the emergency notification phone list (Core Plan 1.1.2) may be summoned.

9.3.2Natural Disasters

9.3.2.1Floods

Floods may result from an unusually heavy rain following a long period of wet weather or a sudden spring thaw with, or without, rainfall. They may be caused by hurricanes with heavy rainfall and exceptionally high tides in coastal areas. Tidal waves may also flood coastal areas or areas adjacent to large inland lakes. Generally, there is ample advance warning of these conditions and as warranted, the following preparations should be considered:

1. Disconnect the main electrical switch, shut the main valve in the gas service line and water line, if any. Determine whether connections on sanitary sewer would be blocked to prevent back up (storm sewer drains should not be blocked).
2. Clear the yard of all loose items that could float away. Store empty drums inside a building and secure them against floating. Underground tanks in yard storage should be filled with water or otherwise anchored to prevent floating and sealed to prevent product or other contaminate from escaping.
3. Store carton packages above anticipated flood level or remove them to a safe place.
4. Remove motors and other electrical equipment and store them above anticipated flood level.

5. Remove automotive equipment, including forklift trucks and other motorized portable equipment, to a safe place.
6. Make sure that vertical tanks and large pipelines (8" and over) are filled, preferably with product. Safety requires maintaining the product level in the tanks at least 10" above the highest anticipated flood level. If sufficient product is not available, water should be used. However, **water should be admitted to the tanks and lines only as a last resort**, and only in sufficient quantities to keep ahead of the flood rise. Horizontal tanks that would be below flood-water level should be filled and anchored.
7. Close and lock product line valves.
8. Consideration should also be given to protection of Company funds and records. If deemed necessary on account of expected high water, valuable papers and funds should be removed from the safe to be stored elsewhere for safekeeping.
9. If possible, file cabinets should be elevated to a height above the expected flood level. If this is not possible, the contents of the file drawers that are subject to flood damage should be removed, tied securely in bundles and stored temporarily at a height above the expected high water level. In the same manner, see that correspondence and records in desk drawers are removed if in danger of loss or damage.
10. Pump out the oil collection compartment of open-top oil / water separators so flood waters do not impact the compartment causing a release to the lands or waters.

9.3.2.2Hurricanes

In the event of an approaching hurricane, the following precautions should be taken:

1. Clear the yard area of all loose items, empty drums, etc., that blow around and cause further damage.
2. Close all doors and windows.
3. Tape and / or board up windows and brace large windows.
4. Brace all large outside doors securely.
5. Small diameter (10' to 12') vertical or horizontal tanks should be at least half filled with product. If product is low, water should be added, only as a last resort.

6. Take precautions as listed above for impending flood if hurricane warnings indicate this emergency.

9.3.2.3.... Tornadoes

Generally, there is little warning of tornado conditions, from 15 minutes to an hour and a half. However, insofar as time permits, the same preparation should be made as indicated above for hurricanes, giving preference in the order listed. A tornado may follow a period of intense ground heat. The first indication of its approach may be a combination of thick dark storm clouds and heavy rainfall or hail. When such signs appear in tornado areas, it is important to maintain contact with local weather reporting agencies.

9.3.2.4....Earthquakes

Brooklyn is in Zone 2 - Moderate Damage Area.

9.3.2.5.... Cleanup

After any emergency has passed, facilities should be returned to operating condition as soon as possible. However, in doing so, certain precautions should be observed:

1. Do not touch loose wires under any circumstances until they have been checked out by a qualified electrician. They may be electrically charged.
2. Do not turn on main electrical switch until the entire system has been checked out (if any part was flooded) by a qualified electrician.
3. Do not operate any electrical equipment until thoroughly dried out and checked (if flooded) by a qualified electrician.
4. Check thoroughly all product lines and tanks for leaks or any other evidence of damage.
5. Check entire Facility for possible damage.
6. Prepare accident report, if necessary.

9.3.3..... Media

All contact with the press or other media will be made by the Complex Manager or a Motiva Communications Representative listed in the Core Plan. All contacts should adhere to the Company's public policy statements and follow existing guidelines.

9.3.4..... Emergency Oversight

When this Plan is activated, the Complex Manager will direct all "outside" activities and all "inside" activities. Those handling administrative duties will stand ready to secure and protect the Company funds and records, and stand ready to assist as directed by the Complex Manager. The Terminal Operator on duty will act as telephone coordinator and liaison with Emergency Agencies.

9.3.5..... First Aid

Local Emergency Medical Services will be contacted by calling 911. If required, a First Aid Station will be established in the Terminal Office.

9.3.6..... Special Matters

9.3.6.1.... Criminal Complaints and Arrests

Under long-standing Company policy no employee, on behalf of the Company, may sign a criminal complaint, institute a criminal action or cause the arrest of anyone unless prior approval of the Legal Department has been obtained. Of course, if a Federal or State Law Enforcement officer desires to sign the complaint or file charges in accordance with his statutory authority and duty, he should be encouraged to do so.

9.3.6.2.... Subsequent Investigations

All contacts with investigating authorities during their subsequent investigations of these types of emergencies should be made only through the Company's Security Representatives. Therefore, any inquiries made by public authorities in connection with any post investigations should be referred to them. However, personnel should cooperate in developing for the Security Representatives any information they may deem to be desirable to furnish the investigating authorities.

9.3.6.3.... Conduct of Employees

Emphasis should always be on the side of preventing undesirable publicity; and, except in self-defense:

**NO PHYSICAL FORCE SHOULD BE USED AGAINST OTHER PERSONS AT ANY
TIME!!**

9.3.6.4.... Bomb Threat Checklist

Name Of Person Receiving Threat		Title	Phone No.
Date Threat Received	Time Threat Received	Reported To	Phone No.

QUESTIONS TO ASK

EXACT WORDING OF THREAT

1. When is the bomb going to explode? _____
2. Where is it right now? _____
3. What does it look like? _____
4. What kind of bomb is it? _____
5. What will cause it to explode? _____
6. Did you place the bomb? _____
7. Why? _____
8. What is your name? _____
9. What is your address and phone? _____

The following require opinions, perceptions and judgments. Please give your first impression.

Caller was:	<input type="checkbox"/> Male	<input type="checkbox"/> Female	<input type="checkbox"/> Adult	<input type="checkbox"/> Child
Estimated age:	<input type="checkbox"/> Pre-teen	<input type="checkbox"/> Teenage	<input type="checkbox"/> 20-40	<input type="checkbox"/> Other
Caller's Speech:	<input type="checkbox"/> Accent	<input type="checkbox"/> Heavy	<input type="checkbox"/> Slight	<input type="checkbox"/> Other
	<input type="checkbox"/> Spanish	<input type="checkbox"/> German	<input type="checkbox"/> German	<input type="checkbox"/> Other
	<input type="checkbox"/> Southern	<input type="checkbox"/> Northern	<input type="checkbox"/> New York	<input type="checkbox"/> Other
Caller's Voice:	<input type="checkbox"/> Fast	<input type="checkbox"/> Slow	<input type="checkbox"/> Excited	<input type="checkbox"/> Angry
	<input type="checkbox"/> Slurred	<input type="checkbox"/> Quite	<input type="checkbox"/> Nasal	<input type="checkbox"/> Slang
	<input type="checkbox"/> Impediment	<input type="checkbox"/> Well Spoken	<input type="checkbox"/> Other	
Background Sound:	<input type="checkbox"/> Animals	<input type="checkbox"/> Railroad	<input type="checkbox"/> Aircraft	<input type="checkbox"/> Street
	<input type="checkbox"/> Other (describe)			

9.4..... DEMONSTRATIONS

9.4.1..... Introduction

Security procedures to be activated in respect to demonstrations have three objectives:

1. Protection of Company employees and property.
2. Protection of business visitors and their property.
3. Continuity of operations.

In the Company's performance of service to the public, constructive communications are encouraged, but communications which take the form of group demonstrations conducted on Company property not only are not constructive but pose a serious threat to the personal safety of employees and probable harm to Company property.

Since these demonstrations could come at any time, with or without warning, to effectively cope with such an emergency, a threat plan of action for each Company facility must be placed in readiness. Guidelines for the development of a plan to meet this type of emergency, including an outline of the actions to be taken, are set out below.

9.4.2..... Authority to Activate Plan

This Plan may be activated by the designated Qualified Individual or the designated Alternate Qualified Individual.

The individual placing the Plan into effect will remain responsible for all activity until relieved by higher authority. Exercising good judgment and without over-reacting, the individual activating the Plan will take all measures necessary to accomplish the three objectives first mentioned.

The highest local authority present, or the Complex Manager if present, will act as Company spokesperson in the event a meeting with the demonstrators is indicated. He / she shall be familiar with Company's public policy statements and the Emergency Reporting Procedures.

The highest local authority present, the Complex Manager or the Motiva Enterprises LLC Communications Representative, will act as spokesperson with the media.

9.4.3..... Emergency Agencies

When deemed necessary, persons listed on the emergency notification phone list (Core Plan, Section 1.1.2) may be summoned.

9.4.4..... Notification

Any individual observing or receiving notice, verbal or written, of an actual or proposed demonstration shall immediately notify the QI/AQI or the Senior Terminal Operator.

If received or noted after hours, and after consideration of first protecting Company employees and forestalling damage to property, every effort will be made to notify the above by telephone.

All employees in the Facility will be notified in person of what action is being taken and what countermeasures, if any, should be taken. If it becomes necessary to evacuate the Facility, a communications post will be established by the Complex Manager and employees may call there for current instructions.

A Control Center will be established in the Terminal Office, if possible. All activities will be directed by the senior person in charge from the Control Center.

9.4.5..... Action Steps

9.4.5.1.... Entrances

If time allows, all entrances to the Facility, except one, should be locked or blocked so that the demonstrators will be required to enter through only one door. However, predesignated personnel with keys should be posted at all such locked entrances so that all doors may be quickly opened if personnel evacuation becomes necessary.

9.4.5.2.... Dangerous Materials

Gates to all fenced areas should be locked and employees positioned where they can warn of points where flammable or other dangerous materials are kept.

9.4.5.3.... Alerting Personnel

All personnel in the Facility should be alerted and kept advised of all developments by the communication means set out in the Plan.

9.4.5.4.... Restricted Areas

Company and other selected personnel will be stationed at every building door, entrance / exit gate, and the truck loading rack (if remote from the office) and advise non-employees that the area is not open to the public. However, no physical force should be used to restrain or resist outsiders.

9.4.5.5.... Files and Desks

If it appears that the protest or demonstration may become unruly or access to restricted areas may be attempted, all desks should be cleared and all desks, files and cabinets locked as directed by the person in charge.

9.4.5.6.... Fire Equipment

Personnel shall be prepared to take up positions where they will be able to readily man hand held fire equipment only. If necessary, the local Fire Department will be summoned by calling 911 by Facility personnel, as directed by the Fire Emergency Plan.

9.4.5.7.... First Aid

Local Emergency Medical Services will be contacted by calling 911. If required, a First Aid Station will be established in the Terminal Office.

9.4.6..... Instructions for Contact with Demonstrators

9.4.6.1 Clarification

At the outset, the exact reason for and purpose of the groups visit should be requested and such information conveyed immediately to the person in charge.

9.4.6.2.... Restrict to Lobby

Efforts should be made to keep demonstrators outside of the Facility or, if they gain entrance, in the lobby or reception area - but by request only. Do not attempt to use force.

9.4.6.3.... Heckling

Do not debate with, taunt, heckle or harass protesters in any manner.

9.4.6.4.... Group Representatives

If possible, the group should be persuaded to designate one (or only a few) person to represent it and it should be suggested that the meeting be held in a separate closed room.

9.4.6.5.... Spokesperson Conduct

The Company spokesperson should always be accompanied by at least two other Company employees (if available), should decline to have his or her conversation recorded, should not pose for pictures, and should not express personal opinions. However, NO attempt to confiscate cameras, film, recorders or any personal articles should be made. The spokesperson should listen courteously, engage in no debate, and answer questions only in terms of authorized Company statements. NO MORE.

9.4.6.6.... Unruly Demonstrations

If the demonstration becomes disruptive or if the group refuses to leave after the Company spokesperson considers the interview at an end, the police should be summoned to the Facility. The Company employee in charge of the emergency should then decide whether the disruptive actions are of such severity as to warrant a request for removal by the police.

9.4.6.7.... Evacuation

If demonstrators begin to intentionally damage or destroy Company property, Company personnel are to be immediately evacuated from the affected area and police action should be immediately requested to protect persons and property.

9.4.6.8.... Criminal Complaints and Arrests

Under a long-standing Company policy, no employee, on behalf of the Company, may sign a criminal complaint, institute a criminal action or cause the arrest of anyone unless prior approval of the Legal Department is obtained. Of course, if a Federal or State Law Enforcement Officer desires to sign the complaint or file charges in accordance with his statutory authority and duty, he should be encouraged to do so.

9.4.6.9.... Restraint by Employees

Emphasis should always be on the side of avoiding provocation or disturbance and preventing undesirable publicity. Except when self-defense becomes necessary, **NO PHYSICAL FORCE SHOULD BE USED BY EMPLOYEES AT ANY TIME.**

**COMMON SENSE, CALMNESS AND DISCRETION SHOULD PREVAIL
AT ALL TIMES!!**

9.5..... FIRE EMERGENCY PLAN

9.5.1..... Introduction

The objective of this Plan is to prepare for a fire emergency and in so doing, provide for the safety of Company personnel, protect Company property, and maintain the ability to continue operations.

Facility personnel will take no action or risk to themselves or other to fight a fire, except when the fire is in the incipient stages where hand-held fire extinguishers may be used by Facility personnel.

Facility personnel will not endanger themselves or others in any way.

No employee shall enter a burning building to fight a fire.

9.5.2..... Authority to Activate Plan

This Plan may be activated by the designated Qualified Individual, the designated Alternate Qualified Individual or any other Facility employee. The individual activating the Plan shall assume responsibility for its complete execution until such time as relieved by higher authority.

9.5.3..... Emergency Agencies and Control Center

When deemed necessary, persons listed on the emergency notification phone list (Core Plan, Section 1.1.2) may be summoned.

9.5.4.....In the Event of a Fire

The person observing the fire will sound the nearest alarm and notify the Terminal Office to notify the local Fire Department by calling 911.

All truck loading at the truck loading rack will cease.

Facility personnel will direct the evacuation of all trucks to a safe location outside of the Facility facility. All drivers will remain with their trucks. If starting vehicles will present an ignition hazard, vehicles will not be moved.

If the fire is at the truck loading rack, Facility personnel will stand by the foam system control actuator and initialize the foam system if the automatic system for the loading rack should fail.

If a Facility employee is on duty, providing that it is safe to do so, a Facility employee will close all tank and pipeline valves and shut off all power to the product pumps.

Facility personnel will ensure that all of the entrance / exit gates are open for emergency vehicles.

Facility personnel, as may be available, will be assigned to the entrance / exit gates to deny access to anyone other than emergency vehicles (Police, Fire, and Ambulance). Without placing themselves in danger, Facility employees may assist emergency response vehicles stopping traffic on East Avenue to allow entrance / exit of trucks and emergency vehicles to / from the Facility.

All non-Company personnel will be directed to leave the Facility taking their personal vehicles with them, if safe to do so.

Facility personnel and / or selected individuals arriving at or returning to the Facility will report to the Qualified Individual for instructions. The QI will be the designated liaison with the Fire Department.

If possible, company funds and / or records will be secured or removed from the Facility to a safe location.

If possible, a Facility employee or selected individual will handle all telephone traffic.

9.5.5.....Fire Evacuation Plan

A detailed Facility evacuation plan and Evacuation Diagram is located in the Core Plan and in Annex 1. The diagram depicts the location of the emergency evacuation routes, fire extinguishers, and fire alarm pull stations.

9.5.6.....Fire Safety Equipment

9.5.6.1.....Fire Alarm Switches

See diagrams in Annex 1.

9.5.6.2.....Truck Loading Rack Foam System

The truck loading rack is protected by a foam system that is activated automatically by fire sensor equipment located on the under side of the loading rack roof.

The truck loading rack foam system may be activated manually from the Terminal Operator's office or from the foam room.

9.5.6.3.....Tank Farm Foam System

Each tank in the tank farm is protected by a foam system that is activated manually with zone control. To activate, the Operator must open the appropriate foam valve that corresponds to the tank and turn on the foam pump.

9.5.6.4.....Portable Fire Extinguishers

Portable fire extinguishers are located at various locations throughout the Facility. A location listing is found in the Core Plan.

9.5.6.5.....Fire Blankets

There are fire blankets located on each lane of the loading rack, one at the pump off station, two in the shop and one in the warehouse.

9.5.7Predetermined Reassembly Locations

If it becomes necessary to evacuate the Facility due to imminent danger, all Facility employees, contractors, drivers, and visitors will safely and quickly proceed to the "Fire Drill Area" located between the main office and warehouse. All employees and visitors will be accounted for by the designated person in charge. All employees and visitors will remain in this area until directed otherwise by the designated person in charge.

COMMON SENSE SHOULD PREVAIL AT ALL TIMES

BE CALM AT ALL TIMES - DO NOT RUN - DO NOT PANIC

Follow the instruction from the designated person in charge or from such civil authorities that are on the scene

**Environmental Compliance Report
Major Petroleum Facility License No. 2-1540**

**Motiva Enterprises Brooklyn Terminal
25 Paidge Avenue
Brooklyn, New York**

October 2010

SECTION A

SPCC PLAN IMPLEMENTATION CHECKLIST

Environmental Compliance Report

This section of the report addresses compliance with certain requirements of Federal Regulations 40 CFR 112.
 For the facilities that are inactive, proceed to Section D, Line 7B

I. STATUS OF SPCC PLAN (40 CFR 112.3).		Yes	No
A. Is the Plan up-to-date with contact persons?		X	
B. Has the Plan been reviewed within the past five years? Date of last review		X, 2010	
C. Has the Plan been reviewed and certified by a Professional Engineer, licensed and registered by the New York State Education Department?		X, 2010	
D. Has the Plan been approved and signed by management?		X, 2010	
II. SPILL HISTORY OF THE FACILITY (40 CFR 112.4) Has there been a reportable discharge(s) at the facility within the preceding 12-month period? If yes, enter the information below. (Add additional sheets, as necessary.)			X
Department Spill Number	Date	Material and Amount Spilled	Cause
Not Applicable			
III. Modification to the Facility (40 CFR 112.5)		Yes	No

A. Has there been a major change in the design, construction, operation or maintenance of the facility during the past five years? If yes, were the changes certified by a Professional Engineer, licensed and registered by the New York State Education Department? Date of major changes: <u>Not Applicable</u>		X X
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B. Does the SPCC Plan or the Facility Response Plan contain:	Yes	No
(1) a written commitment by management to provide the necessary resources to implement the Plan?	X	
(2) a written description of all spills and actions taken to prevent recurrence?	X	
(3) an assessment of potential spills showing possible location, volume and direction of flow?	X	
(4) a description of the type of secondary containment needed to contain each spill?	X	
If secondary containment is not provided, explain on a separate sheet how spills are prevented from reaching waters.		
	Not Applicable	
IV. Drainage (40 CFR 112.7)		
A. Does the Plan discuss the following issues:		
(1) how drainage from the diked area is contained and released?	X	
(2) the use of drainage valves and how the valves are opened?	X	
(3) undiked system that is used to return a spill to the plant. If so, does the plan discuss how this is accomplished?	X	
(4) any diversion system that is used to return a spill to the plant. If yes, does the plan discuss how this is accomplished?	X X	
B. Does the facility have a SPDES Permit to release wastewater from the diked area? (A SPDES Permit is required to discharge wastewater.)	X	
C. Are wastewater discharges from treatment plants monitored to detect system upset?	X	
D. Are there written procedures for draining storm water from the diked area?	X	
(1) Are bypass valves normally sealed closed?	X	
(2) When the bypass valve is open, is a supervisor present?	X Terminal Operator	
(3) Are records maintained for each drainage release?	X	

V. Bulk Storage Tanks (40 CFR 112.7) Does the SPCC Plan address the following issues:		
A. Is the petroleum being stored compatible with the material used to construct the tank ,ancillary equipment and secondary containment material?	X	
The secondary containment system(s)meet the following reqm'ts?	Yes	No
International Building Codes	X	
Federal	X	
New York State	X	
County	X	
C. Are aboveground tanks in contact with soil protected from corrosion?	X	
D. Are underground tanks tested or have leak detection to insure that the tanks are not leaking?	X	
E. Are aboveground tanks internally inspected for structural integrity and to insure that they are not leaking?	X	
F. Have plans been implemented to prevent spills during transfers of petroleum products, including the use of:	X	
(1) high level alarms and alarm pump shut off devices?	X	
(2) communications between tank gauger and pumping station?	X	
G. Are leaks from tank seams, gaskets, rivets and bolt immediately repaired?	X	
VI. Transfer Operations, Pumping and In-plant Process (40 CFR 112.7) Does the SPCC Plan address the following issues:		
A. Are buried pipelines cathodically protected?	X	
B. Are out-of-service pipelines properly closed, capped or blank-flanged and properly labeled?	X	
C. Are aboveground pipe supports properly designed to minimize:	X	
(1) abrasion and corrosion?		
(2) expansion and contraction?	X	

D. Do personnel check the conditions of pipelines, including flange and expansion joints, valves, drip pans, pipeline supports, locking of valves and metal surfaces?	X	
E. Are pipelines periodically pressure tested?	X	
F. Is vehicular traffic controlled near aboveground pipelines?	X	
VII. Tank Car and Tank Truck Loading/Unloading Rack (40 CFR 112.7)		
Does the Plan address the following issues:		
	Yes	No
A. Do loading/unloading procedures meet Department of Transportation regulations?	X	
B. Is the secondary containment for the loading area designed to hold at least the largest single compartment of a tanker truck?	X	
C. Are written procedures in place to ensure transfer lines are disconnected prior to vehicular departure?	X	
VIII. Inspections and Records (40 CFR 112.7)		
Does the Plan include a copy of:		
A. written inspections procedures to be followed by personnel?	X	
B. records of inspections for the past three years?	X	
IX. Security (40 CFR 112.7)		
Does the Plan discuss:		
A. the need for security, such as full fencing, locking of entrance gates and/or guards?	X - Annex	
B. the security for all master flow and drain valves which would permit direct outward flow of a tank's contents?	X	
C. how product pump starter controls are locked or limit accessibility when not operating?	X	
C. the need for capping or installing blank flanges in loading/unloading pipelines when they are not in full service or are in standby service?	X	

D. the adequacy of facility lighting to facilitate discovery of spills and prevention of vandalism?	X	
X. Personnel, Training and Spill Prevention Procedures (40 CFR 112.7)		
	Yes	No
A. Does the Plan contain a training program for personnel responsible for:		
(1) operation and maintenance of equipment?	X	
(2) preventing discharges of oil and complying with pollution control laws, rules and regulations?	X	
(3) spill response?	X	
B. Has a person been given responsibility for <u>spill prevention</u> ?		
Name: <u>QI. Frank Signoriello / AQI James Lintz</u>		
Title: <u>Terminal Superintendent / Complex Manager</u>		
Telephone No.: <u>718-383-4066 / 203-520-0403</u>		
X1. Facility Response Plan (40 CFR 112.20)		
Does the facility have a Facility Response Plan approved by the USCG/USEPA?	X	
Date of the latest FRP: Latest update 10/2009, last EPA Inspection 9/29/10		
Date last FRP Drill Performed? 9/9/10		

SECTION B

FEDERAL UNDERGROUND STORAGE TANK REGULATIONS Environmental Compliance Report

This report address compliance with certain sections of the USEPA Underground Storage Tank Regulations (40 CFR Part 280)					
I. Tank Number	Tank #	Tank #	Tank #	Tank #	Tank #
A. What is the tank identification number on the facility information sheet? For additional tanks, use extra copies of this form.	None				
B. Is tank leak detection performed? (Required by 40 CFR Part 280.40) Y/N					
C. Is tank protected from corrosion? (Required by 40 CFR Part 280.21) Y/N					
D. Does the tank have a spill catchment basin? (Required by 40 CFR Part 280.21[d]) Y/N					
E. Does the tank have an overfill prevention device such as an automatic shutoff device, overfill alarm or float vent valve? (Required by 40 CFR Part 280.21[d]). Y/N					
F. If the tank has undergone permanent closure since 12/22/88, was a site assessment performed at the time of closure? (Required by 40 CFR Part 280.72) Y/N					
II. Underground Piping					

A. Do pressurized piping systems have a line leak detector? (Required by 40 CFR Part 280.41[b]) Y/N					
B. Is pipe leak detection being performed? (Required by 40 CFR 280.41(b)) Y/N - Do pressurized piping systems have an additional form of leak detection? Y/N - Do suction systems have a form of leak detection, if exempt from the leak detection requirements. Y/N					
C. Is the product piping protected from corrosion? (Required by 40 CFR Part 280.21[c]) Y/N					

SECTION C

NYS PETROLEUM BULK STORAGE REGULATIONS Environmental Compliance Report

This section of the report addresses compliance with certain sections of the New York State Petroleum Bulk Storage (PBS) Regulations (6 NYCRR Part 613 and 614).

PBS Regulations (6 NYCRR Parts 613 and 614)					
Underground and Aboveground Tanks					
	Yes			Yes	
1. Are monitoring wells marked and secured?	X				
Tank Number	Tank #	Tank #	Tank #	Tank #	Tank #
For additional tanks, use extra copies of this form.	41	42	43	44	45
2. If tanks are temporarily out-of-service, have they been temporarily closed properly? Y/N/NA	N/A	N/A	N/A	N/A	N/A
3. Were any unreported spills observed during the inspection? Y/N If yes, explain on separate sheet.	N	N	N	N	N
4. For underground tanks: have tank top and dispenser sumps and fill port catch basins been properly maintained? Y/N (accumulation of product) / 1 (poor condition)	N/A	N/A	N/A	N/A	N/A
5. Are the fill ports color coded to identify the product in the tank? See 613.3(b). Y/N/NA	Y	Y	Y	Y	Y
6. Are the motor fuel tanks with pressurized piping equipped with shear valves . Y/N/NA/1(Inoperative)	N/A	N/A	N/A	N/A	N/A

Underground Tanks					
Tank Number For additional tanks, use extra copies of this form.	Tank #	Tank #	Tank #	Tank #	Tank #
7. Do the tanks installed after 12/86 comply with the new tank system standards ? Y/N/NA If no, identify the missing item(s)? (1) corrosion resistant, (2) secondary containment, (3) leak monitoring, (4) overfill prevention (auto shut-off valve, high level alarm or ball float valve) and have (5) corrosion resistant piping with (6) leak monitoring (line leak detector for pressurized piping) or (7) only having one check valve under the pump in suction piping system (8) tank label (9) as built plans or drawings.					
8. Is leak monitoring (UST) being performed? Y/N Identify the method(s). 1 (wall tank - interstice is checked) / 2 (inoperative system) / 3 (monitoring records not maintained) / 4 (inappropriate method)					
9. Is the cathodic protection for steel UST and piping systems monitored annually? Y/N If no, identify the missing cathodic protection. N (missing both) / 1 (no monitoring on tank) / 2 (no monitoring on line) / 3 (records not maintained) / 4 (system not maintained to achieve protection) / 5 (inadequate method)					
10. Are inventory records for metered UST systems being properly maintained and reconciled? Mark (1) for no records, (2) for poor equipment, (3) for no Reconciliation. (4) for reconciliation performed other than 10 days					
11. Do unmetered tanks have annual standpipe, or tank test or other leak detect method? Y/N					
12. Has a tightness testing (USTs) been conducted on the tank and piping system? Y/N Check for both tank and piping. Y/N/ 1(entire tank not tested) / 2 (no test on line)					

Aboveground Tanks					
Tank Number For additional tanks use extra copies of this form.	Tank #	Tank #	Tank #	Tank #	Tank #
	41	42	43	44	45
13. For the tanks installed after 12/86, do they meet the new tank system standards ? Y/N/NA If no, identify missing items? ASTs must be (1)welded steel with adequate (2) surface coating (paint), if on soil have (3) cathodic protection and if on grade have an (4) impermeable barrier under the tank with the ability to (5)monitor for leaks.	N/A	N/A	N/A	N/A	N/A
14. Are monthly inspections for all ASTs performed? Y/N/1 (records not maintained)	Y	Y	Y	Y	Y
15. Are ten year inspections for ASTs performed? Y/N/X/1 (records not maintained)	Y	Y	Y	Y	Y
16. Secondary containment Does the secondary containment systems comply with the requirements found in Part 613 and Part 614? Y/N If no, explain on separate sheet.	Y	Y	Y	Y	Y
17. Are the dike drain valves locked in a closed position Y/N/NA	Y	Y	Y	Y	Y
18. Are the ASTs equipped with a gauge, high level alarm or other equivalent device? Y/N/ 1(inoperative)	Y	Y	Y	Y	Y
19. Are the ASTs marked with the design/working capacity, and identification number? Y/N	Y	Y	Y	Y	Y
20. Is a solenoid or equivalent valve in place for gravity-fed motor fuel dispensers Y/N/ 1(inoperative)/ X (not applicable)	X	X	X	X	X
21. Is there a check valve in place for pump-filled tanks with remote fills? Y/N/ 1(inoperative)/ X (not applicable)	Y	Y	Y	Y	Y

SECTION C

NYS PETROLEUM BULK STORAGE REGULATIONS Environmental Compliance Report

This section of the report addresses compliance with certain sections of the New York State Petroleum Bulk Storage (PBS) Regulations (6 NYCRR Part 613 and 614).

PBS Regulations (6 NYCRR Parts 613 and 614)					
Underground and Aboveground Tanks					
	Yes			Yes	
1. Are monitoring wells marked and secured?	X				
Tank Number	Tank #	Tank #	Tank #	Tank #	Tank #
For additional tanks, use extra copies of this form.	46	47	48	49	50
2. If tanks are temporarily out-of-service, have they been temporarily closed properly? Y/N/NA	N/A	N/A	N/A	N/A	N/A
3. Were any unreported spills observed during the inspection? Y/N If yes, explain on separate sheet.	N	N	N	N	N
4. For underground tanks: have tank top and dispenser sumps and fill port catch basins been properly maintained? Y/N (accumulation of product) / 1 (poor condition)	N/A	N/A	N/A	N/A	N/A
5. Are the fill ports color coded to identify the product in the tank? See 613.3(b). Y/N/NA	Y	Y	Y	Y	Y
6. Are the motor fuel tanks with pressurized piping equipped with shear valves. Y/N/NA/1(Inoperative)	N/A	N/A	N/A	N/A	N/A

Aboveground Tanks					
Tank Number For additional tanks use extra copies of this form	Tank #	Tank #	Tank #	Tank #	Tank #
	46	47	48	49	50
13. For the tanks installed after 12/86, do they meet the new tank system standards ? Y/N/NA If no, identify missing items? ASTs must be (1) welded steel with adequate (2) surface coating (paint), if on soil have (3) cathodic protection and if on grade have an (4) impermeable barrier under the tank with the ability to (5) monitor for leaks.	N/A	N/A	N/A	N/A	N/A
14. Are monthly inspections for all ASTs performed? Y/N/1 (records not maintained)	Y	Y	Y	Y	Y
15. Are ten year inspections for ASTs performed? Y/N/X/1 (records not maintained)	Y	Y	Y	Y	Y
16. Secondary containment Does the secondary containment systems comply with the requirements found in Part 613 and Part 614? Y/N If no, explain on separate sheet.	Y	Y	Y	Y	Y
17. Are the dike drain valves <u>locked in a closed position</u> Y/N/NA	Y	Y	Y	Y	Y
18. Are the ASTs equipped with a gauge, high level alarm or other equivalent device ? Y/N/ 1(inoperative)	Y	Y	Y	Y	Y
19. Are the ASTs marked with the design/working capacity, and identification number ? Y/N	Y	Y	Y	Y	Y
20. Is a solenoid or equivalent valve in place for gravity-fed motor fuel dispensers Y/N/ 1(inoperative)/ X (not applicable)	X	X	X	X	X
21. Is there a check valve in place for pump-filled tanks with remote fills? Y/N/ 1(inoperative)/ X (not applicable)	Y	Y	Y	Y	Y

SECTION C

NYS PETROLEUM BULK STORAGE REGULATIONS Environmental Compliance Report

This section of the report addresses compliance with certain sections of the New York State Petroleum Bulk Storage (PBS) Regulations (6 NYCRR Part 613 and 614).

PBS Regulations (6 NYCRR Parts 613 and 614)					
Underground and Aboveground Tanks					
	Yes			Yes	
1. Are monitoring wells marked and secured?	X				
Tank Number	Tank #	Tank #	Tank #	Tank #	Tank #
For additional tanks, use extra copies of this form.	55				
2. If tanks are temporarily out-of-service, have they been temporarily closed properly? Y/N/NA	Y				
3. Were any unreported spills observed during the inspection? Y/N If yes, explain on separate sheet.	N				
4. For underground tanks: have tank top and dispenser sumps and fill port catch basins been properly maintained? Y/N (accumulation of product) / 1 (poor condition)	N/A				
5. Are the fill ports color coded to identify the product in the tank? See 613.3(b). Y/N/NA	Y				
6. Are the motor fuel tanks with pressurized piping equipped with shear valves ? Y/N/NA/1(Inoperative)	N/A				

Aboveground Tanks					
Tank Number For additional tanks use extra copies of this form.	Tank #	Tank #	Tank #	Tank #	Tank #
	55				
13. For the tanks installed after 12/86, do they meet the new tank system standards ? Y/N/NA	Y				
If no, identify missing items? ASTs must be (1)welded steel with adequate (2) surface coating (paint), if on soil have (3) cathodic protection and if on grade have an (4) impermeable barrier under the tank with the ability to (5)monitor for leaks.					
14. Are monthly inspections for all ASTs performed? Y/N/1 (records not maintained)	Y				
15. Are ten year inspections for ASTs performed? Y/N/X/1 (records not maintained)	Y				
16. Secondary containment Does the secondary containment systems comply with the requirements found in Part 613 and Part 614? Y/N If no, explain on separate sheet.	Y				
17. Are the dike drain valves <u>locked in a closed position</u> Y/N/NA	Y				
18. Are the ASTs equipped with a gauge, high level alarm or other equivalent device ? Y/N/ 1(inoperative)	Y				
19. Are the ASTs marked with the design/working capacity, and identification number ? Y/N	Y				
20. Is a solenoid or equivalent valve in place for gravity-fed motor fuel dispensers. Y/N/ 1(inoperative)/ X (not applicable)	X				
21. Is there a check valve in place for pump-filled tanks with remote fills? Y/N/ 1(inoperative)/ X (not applicable)	Y				

SECTION D

ONSHORE MAJOR OIL STORAGE FACILITY LICENSING CONDITIONS Environmental Compliance Report

This section of the report addresses licensing conditions applicable to your facility regulated under Article 12 of the New York Navigation Law.		
A. Closure Plan	N/A	
1. If the facility is inactive, was a closure plan submitted to the Department? Date: _____		
2. Did the Department approve of the closure plan?	N/A	
3. Are any of the aboveground tanks considered temporarily or permanently closed? If yes, explain on a separate sheet.	N/A	
B. Monitoring Wells and Sampling	Y	
1. Has the Department approved the monitoring well system?		
2. Has a baseline assessment of groundwater quality been completed?	Y	
3. Are wells monitored monthly?	Y	
4. Are wells monitored biannually?		
5. Are wells monitored annually?		
6. Are sampling results forwarded to the Department's Regional Office?		
annually <u>June 30</u>	X	
biannually _____		
monthly _____		
C. Secondary Containment	Y	
1. Have secondary containment systems been tested for permeability?		
2. Has a detailed description of the secondary containment systems been submitted to the Department?	Y	
3. Do all secondary containment systems meet the Department's standards 613.3(c)(6)? If no, explain on separate sheet.	Y	

4. Was a five year in-depth secondary containment system integrity inspection performed? Date of last inspection: <u>Sept. 2008</u> 2010 Inspection in progress, report pending. Was the inspection approved by the Department? If no, explain on a separate sheet: Report Submitted Approval Pending	Y	
	Y	
5. Does the Plan evaluate groundwater geology, hydrology, contamination and risks?	Y	
6. If secondary containment systems do not meet standards set forth in 613.3(c)(6), have engineering plans been submitted to the Department?	N/A	
7. Has the Department approved the engineering plans?	N/A	
D. Site Map Has a site map acceptable to the Department been prepared?	Y	
E. Variance. Has the Department granted a variance? If yes, is the facility in compliance with the variance?	Yes	No
		X
	N/A	
F. Violations Were any violations to Federal, State and county, local regulations, codes and license conditions cited during the last five years? If yes, explain on a separate sheet.		X
G. Additional Licensing Requirements 1. Have accurate monthly reports on the number of barrels transferred at the facility been submitted to the Department each month?	X	
2. Have monthly license fees and surcharges been paid to the Department?	X	

**BEST MANAGEMENT PRACTICES &
STORMWATER POLLUTION PREVENTION PLAN**

MOTIVA ENTERPRISES LLC

BROOKLYN TERMINAL

**Brooklyn Terminal
25 Paidge Avenue
Brooklyn, NY 11222**

Tel. (718) 383-4066

FACILITY INFORMATION PAGE

<p><i>Facility Information:</i></p> <ul style="list-style-type: none">• Facilities Addressed in this Plan:• Name & Address of Owner:• Designated person accountable for the implementation of this Plan at the facility sated above:	<p>Owner/Operator – Motiva Enterprises LLC</p> <ul style="list-style-type: none">• Brooklyn Terminal <p>Motiva Enterprises LLC 910 Louisiana Street Houston, TX 77002</p> <p>James W. Lintz – Terminal Manager Brooklyn Terminal 25 Paidge Avenue Brooklyn, NY 11222</p> <p>Tel. (718) 383-4066</p>
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STORMWATER POLLUTION PREVENTION PLAN

REVISION RECORD

Note: It is the responsibility of the holder of this plan to insure that all changes and updates are made. The holder should:

- Remove and discard obsolete pages.
- Replace obsolete pages with updated pages.
- Record each revision on this form.

Change Date	Affected Pages Numbers	Description of Change(s)	Name
July 2000	Entire Plan	Update per SPDES Permit	D. Bier
Oct. 26, 2004	Entire Plan	Review of Terminal & Operational changes – None needed at this time.	
July 2009	Cover, ii, v,	Update	D. Bier
EXAMPLE			
01/01/99	1-1 thru 1-4; 5-2	Update	

2.0 GENERAL INFORMATION

2.1 TYPE OF FACILITY

The facility is an onshore storage terminal that receives and distributes gasoline, ethanol and gasoline additives. Specific facility information is provided in the terminal's Integrated Contingency Plan (ICP).

2.2 POLLUTION PREVENTION TEAM

The Terminal Manager assumes the responsibility for implementation, maintenance and revision of the BMP/SWPP Plan. The Terminal Manager and Terminal Superintendent/Supervisor serve as members of the BMP/Stormwater Pollution Prevention Team. Additional terminal and environmental personnel as designated by the Terminal Manager will assist in the development and implementation of the BMP/SWPP Plan as necessary. Emergency Contacts for the Terminal are provided in the ICP. Roles and responsibilities of the company responders are also detailed in the ICP.

2.3 EXTERNAL CONTACTS

The Facility will ensure that required notifications are made to federal, state and local agencies when appropriate. Internal and External Reporting requirements are outlined in the ICP.

2.4 SURFACE WATER PROXIMITY

The Facility is positioned adjacent to the Newtown Creek. The Newtown Creek empties into the East River. Maps and charts of the surface water bodies are incorporated in to the ICP.

2.5 SURFACE DRAINAGE

The facility is located on a relatively flat area. Drainage from the contained areas is addressed below. The Terminal Spill Prevention Control and Countermeasure (SPCC) Plan (the SPCC Plan is part of the ICP) also addresses the rate and direction of flow from potential spill areas. Rainfall onto the soil surfaces outside of the Terminal's operational area infiltrates into the soil or flows toward the Terminal's operational areas. All operational areas of the Terminal drain to the oil/water separator for treatment prior to discharge from the SPDES Discharge No. 001. Effluent monitoring is conducted for the following parameters:

- Flow
- Oil & Grease
- pH
- Benzene, Toluene, Ethylbenzene, Xylene(s) and MTBE

Drainage from Diked Areas

- The drainage from the diked storage areas is controlled by individual manual valves that are kept closed except when draining stormwater to the oil/water separator. The diked containment basins are isolated from the adjacent basins by dikes and the

3.0 POTENTIAL POLLUTANT SOURCES

3.1 IDENTIFICATION OF POTENTIAL POLLUTANT SOURCES & BEST MANAGEMENT CONTROLS

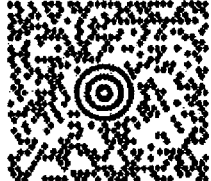

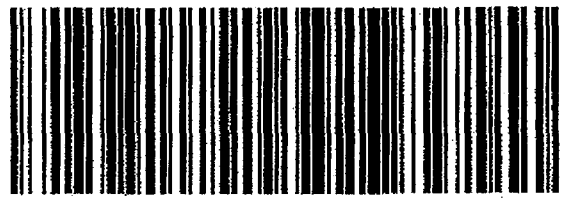

There is limited potential for the materials stored or processed on site to impact surface waters since most of the materials are contained within closed systems, such as tanks, pipes and other equipment. The significant materials that are handled and/or stored at the Terminal include: gasoline, ethanol and gasoline additives. In addition to these materials, small amounts of maintenance related materials are stored and used. These materials are stored inside buildings to prevent any contact with stormwater. Diesel fuel is not stored at the Terminal, but is contained in fuel tanks of the trucks that load at the Terminal. Figure 3.1 below is a narrative description of the materials, how the materials are handled and the Materials Management Practices (BMPs) employed to reduce the potential of these sources to contribute pollutants to stormwater discharges.

3.2 SPILLS & LEAKS

There have been no spills of toxic or hazardous substances by Motiva Enterprises at the Terminal. Spills that occur are reported and are to be documented as prescribed in the ICP. Please see the ICP for a listing of any potential spills or leaks.

3.3 MONITORING PROGRAM

Stormwater is monitored in accordance with the Terminal's SPDES Permit (No. NY0006131). Sampling data is reported in the monthly Discharge Monitoring Reports (DMRs) with copies of the reports and data kept in the Terminal's files. The monitoring parameters are noted in Section 2.5 of this plan.

JENNIFER BOTHWELL 860-749-2839 MOTIVA ENTERPRISES LLC 35-31 TALCOTTVILLE RD VERNON CT 06066		2.0 LBS LTR	1 OF 1
SHIP TO: BUREAU OF TECHNICAL SUPPORT NYSDEC 11TH FLOOR 625 BROADWAY ALBANY NY 12207-2942			
	NY 122 9-01 		
UPS NEXT DAY AIR SAVER 1P TRACKING #: 1Z 71E 42V 13 9039 5114			
			
BILLING: P/P			
Reference #1: Brooklyn CBS Renewal			
US 12.8.10		WNTIE70 06.0A 07/2010	

https://www.ups.com/track/track?Action=PrintPrint

Receipt&POP 1.FVFI=1... 10/22/2010

Shell/Motiva 0009393

Bothwell, Jennifer L MOTIVA-DVM/251

From: UPS Quantum View [auto-notify@ups.com]
Sent: Monday, October 25, 2010 10:47 AM
To: Bothwell, Jennifer L MOTIVA-DVM/251
Subject: UPS Delivery Notification, Tracking Number 1Z71E42V1390395114

*****Do not reply to this e-mail. UPS and Motiva Enterprises LLC will not receive your reply.**

At the request of Motiva Enterprises LLC, this notice is to confirm that the following shipment has been delivered.

Important Delivery Information

Message from Motiva Enterprises LLC:
The package has been delivered.

Tracking Number: 1Z71E42V1390395114
Delivery Date / Time: 25-October-2010 / 10:06 AM

Delivery Location: RECEIVER
Signed by: FULLER

Shipment Detail

Ship To:
Bureau of Technical Support
NYSDEC
625 BROADWAY
ALBANY
NY
12207
US

Number of Packages 1
UPS Service: NEXT DAY AIR SAVER
Weight: 2.0 LBS
Reference Number 1: Brooklyn CBS Renewal
